NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

TECHNICAL NOTE

No. 1640

DIRECT-READING DESIGN CHARTS FOR 75S-T ALUMINUM-ALLOY
FLAT COMPRESSION PANELS HAVING LONGITUDINAL

STRAIGHT-WEB Y-SECTION STIFFENERS

By Norris F. Dow and William A. Hickman

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Langley Field, Va.

Washington August 1948



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SUMMARY

Direct-reading design charts are presented for 758-T aluminum-alloy flat compression panels having longitudinal straight-web Y-section stiffeners. These charts make possible the direct determination of the stress and all the panel proportions required to carry a given intensity of loading with a given skin thickness and effective length of panel.

INTRODUCTION

Design charts for wing compression panels have been going through a process of development since the introduction of the parameter intensity-of-loading divided by effective-length-of-panel (references l and 2). This parameter was originally conceived for use in measuring the relative structural efficiency of different types of construction, and it has been so used by a number of investigators. (See, for example, reference 3.) It was also found to have particular value for use in design charts for longitudinally stiffened compression panels (references 4 and 5). Design charts of the type presented in references 4 and 5 fell short of maximum utility, however, because they did not permit the direct selection of panel proportions to meet the principal design conditions - intensity of loading, skin thickness, and effective length of panel. In order to increase the usefulness of such charts, a summary type of plot was proposed in reference 6 for use with them. This plot made possible the direct determination of the stress that could be carried by minimum-weight panels and one of the panel proportions required to achieve minimum weight, namely, the ratio of stiffener thickness to skin thickness. The other panel proportions, however, could not be found directly.

In the present paper, design charts are presented which permit the direct determination of all the panel proportions required to achieve minimum weight, as well as all the proportions other than those for minimum weight which will also meet the given design conditions. These charts are therefore useful not only for finding minimum-weight proportions but also for studying the effect of changing the design conditions, or for selecting proportions, other than those for minimum weight, which may be more suitable for a particular application.

SYMBOLS

The symbols used for the panel dimensions are given in figure 1. In addition, the following symbols are used:

- c coefficient of end fixity as used in Euler column formula
- d rivet diameter, inches
- L length of panel, inches
- p rivet pitch, inches
- P, compressive load per inch of panel width, kips per inch
- r all fillet radii, inches
- t cross-sectional area per inch of panel width, expressed as an equivalent or average thickness, inches
- ρ radius of gyration, inches
- of average stress at failing load, ksi
- ocr stress for local buckling of sheet, ksi
- ocv compressive yield stress, ksi

DIRECT-READING DESIGN CHARTS

Direct-reading design charts for 758-T aluminum-alloy flat compression panels with longitudinal straight-web Y-section stiffeners having the properties and proportions given in tables 1 to 6 are presented in two forms in figures 2 to 11. In the first form (figs. 2 to 6), the design conditions of intensity of loading, effective length of panel, and skin thickness are incorporated in the ordinate P_1/t_3 and the abscissa $\frac{P_1}{L/\sqrt{c}}$. This form, having the design conditions incorporated in the ordinate and abscissa, is the more useful for most design purposes because the curves are more widely spaced and interpolation is more straightforward. In the second (alternate) form (figs. 7 to 11), the average stress at failure T_1 is plotted against P_1/t_3 as was done

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in the summary plots of reference 6. This alternate form, having the stress - an inverse measure of weight for a given load - as ordinate, is the more useful for making generalizations and comparisons of structural efficiency because it shows how nearly the stress actually carried approaches the upper limit corresponding to the stress that would be achieved by a pure shell construction if a pure shell could carry the load without failure. This upper limit of stress is represented by the lines for $\widehat{\sigma}_f = \frac{1}{t_S}$ (infinite stiffener spacing) in figures 7 to 11.

Values of the ratios of stiffener thickness to skin thickness tw/ts, average spacing of rivet lines to skin thickness S/tg (because there are two rivet lines associated with each Y-section, the stiffener spacing equals 2S), and height of stiffener to stiffener thickness H/tw, which will satisfy the design conditions, may be found directly from these charts, and the corresponding section properties \bar{t}/tg , \bar{h}/tg , and ρ/tg may be found from tables 2 to 6. In the first form of design chart (figs. 2 to 6) dashed lines are used to indicate values of average stress at failure $\overline{\sigma_f}$; whereas, on the alternate form of design chart (figs. 7 to 11) dashed lines are used to indicate values of $\frac{P_1}{L/\sqrt{c}}$. In both forms the value of $\overline{\sigma}_{\mathbf{f}}$ corresponding to the point at which each curve is cut by a short heavy line is used to represent the value of the stress for example, the value of $\sigma_{\rm cr}$ for the proportions represented the example, the value of $\sigma_{\rm cr}$ for $\frac{H}{t_W} = 33.8$ and $\frac{S}{t_S} = 16.2$ in figure 2 is approximately 56 ksi. (Only a very short panel of these proportions would buckle before failure - one having a value of $\frac{P_1}{L//c} > 0.52$.) If local buckling σ_{cr} for the proportions represented by that curve. For the value of σ_{CT} is so low that the short heavy line would fall outside the boundaries of the chart, a numerical value of σ_{cr} is given and is associated with the proper proportions by a leader to the curve. The panel proportions which have minimum weight are indicated on both forms of these charts by the use of colors as follows:

- (1) If the proportions correspond to a blue region, they are the proportions which give the lightest possible 75S-T Y-stiffened penel which will meet the design conditions
- (2) If the proportions correspond to a red region, they are the lightest possible at the ratio of stiffener thickness to skin thickness given by that particular chart, but some other thickness ratio would give a lighter design
- (3) If the proportions correspond to a white region, the proportions meet the design conditions, but they are not the lightest which will meet the conditions

Because in many cases the proportions may be varied somewhat from those indicated by the red and blue regions with little change in the value of the stress that can be carried, too much importance should not be attached to the exact proportions indicated by the colors to have minimum weight. In any particular case for which a deviation from the minimum-weight proportions is made, however, caution dictates that the weight penalty associated with this deviation be determined.

The development of the direct-reading charts is described in the appendix.

USE OF THE DIRECT-READING DESIGN CHARTS

The manner of using the direct-reading design charts depends in some measure on the desired degree of precision of interpolation among the curves. For many purposes, interpolation by inspection is of adequate accuracy, and the use of the charts requires only the calculation of the values of the design parameters P_1/t_B and $\frac{P_1}{L/\sqrt{c}}$ to permit the desired proportions to be read directly from the curves. The proportions for minimum weight, moreover, may be found directly as those corresponding to the blue region on the curves.

If more accurate interpolation is desired, a plot can readily be made of H/t_W , $\bar{\sigma}_f$, and σ_{cr} against S/ts at the given values of P_1/t and $\frac{P_1}{L/\sqrt{c}}$ and the proportions can be picked from it. (This plot is similar to that which results from the use of the minimum-weight design procedure with the previously available design charts, references 4 to 6.) On a plot of this type, the proportions for minimum weight correspond to those associated with the highest value of $\bar{\sigma}_f$.

As a check on the accuracy of interpolation, the cross-sectional area per inch of width of the design may be determined from the values of t/tg given in tables 2 to 6 and the value of the intensity of loading that can be carried on this cross-sectional area per inch at the value of $\bar{\sigma}_f$ given by the charts may then be compared with the design value of P_i .

ILLUSTRATIVE EXAMPLE

In order to illustrate the use of the direct-reading design charts and the simplicity of the computations associated with them compared with those required with previous charts, a panel will be designed for minimum weight to meet the same principal design conditions used to illustrate the design procedures in reference 4, namely:

- 1. Intensity of loading $P_1 = 3.0$ kips per inch
- 2. Skin thickness $t_S = 0.064$ inch
- 3. Effective length $\frac{L}{\sqrt{c}}$ = 20 inches

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As was pointed out in reference 6, an intensity of loading as small as 3.0 kips per inch may require a stiffener thickness smaller than can be successfully extruded. The value of P₁ of 3.0 kips per inch is retained for the example, however, in order to provide a ready comparison with the examples of reference 4.

First the values of
$$P_1/t_S$$
 and $\frac{P_1}{L/\sqrt{c}}$ are calculated
$$\frac{P_1}{t_S} = \frac{3.0}{0.064}$$
$$= 46.9 \text{ ksi}$$
$$\frac{P_1}{L/\sqrt{c}} = \frac{3.0}{20/\sqrt{1}}$$
$$= 0.15 \text{ ksi}$$

Then a trial value of t_W/t_S is assumed (for the example $\frac{t_W}{t_S} = 0.51$ will be used). In the chart for this value of t_W/t_S (fig. 3) the points corresponding to the design values of P_1/t_S and $\frac{P_1}{L/\sqrt{c}}$ lie above the red line at $\frac{H}{t_W} \le 44.6$ (or $\frac{b_W}{t_W} \le 24$) and below the red line at $\frac{H}{t_W} \ge 49.9$ (or $\frac{b_W}{t_W} \ge 27$). Accordingly, the value of H/t_W for minimum weight for $\frac{t_W}{t_S} = 0.51$ lies between 44.6 and 49.9 and, because these values are established by red lines, not blue lines, some value of t_W/t_S other than 0.51 will give less weight. Inspection of the charts for other values of t_W/t_S reveals that at the given design values of P_1/t_S and $\frac{P_1}{L/\sqrt{c}}$ the blue region lies between $\frac{H}{t_W} = 49.9$ and $\frac{H}{t_W} = 60.7$ and is very near to $\frac{H}{t_W} = 55.3$ in the chart for $\frac{t_W}{t_S} = 0.40$. By interpolation, the panel proportions corresponding to this blue region are found to be $\frac{H}{t_W} \approx 55$, $\frac{S}{t_S} \approx 32.5$, $\frac{b_W}{t_W} \approx 30$, $\frac{b_S}{t_S} \approx 51$, $\bar{o}_1 \approx 34$ ksi, and $\sigma_{cr} \approx 16$ ksi. These proportions, then, are those for minimum weight. The actual panel dimensions can be calculated from these proportions as

$$t_W = \frac{t_W}{t_S} t_S$$

= 0.40(0.064)

≈ 0.025 inch

$$H = \frac{H}{t_W} t_W$$

= 55(0.025)

= 1.38 inches

$$S = \frac{S}{t_S} t_S$$

= 32.5(0.064)

= 2.08 inches

.

and the section properties can be determined from table 2 as

$$\bar{h} = \frac{\bar{h}}{t_S} t_S$$

= 3.77(0.064)

= 0.241 inch

$$\rho = \frac{\rho}{t_{S}} t_{S}$$

= 6.90(0.064)

= 0.442 inch

In order to illustrate the use of the direct-reading design charts when more accuracy than that corresponding to interpolation by inspection is desired, a plot has been made (fig. 12) of the values of $\overline{\sigma}_f$, σ_{cr} , and $\overline{H/t_W}$ given by the charts at the design values of P_1/t_S and $P_1/\overline{t_C}$. The proportions which give the highest value of $\overline{\sigma}_f$ can be readily selected from a plot of this kind. (For the example these proportions are so nearly the same as were obtained by inspection that the values will not be repeated; however, the flatness of the curve of $\overline{\sigma}_f$ against S/t_S in fig. 12 shows that, for a fairly wide range of proportions for this particular design, the stress that could be carried would be substantially the same as that for minimum weight.)

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As a check on the accuracy of interpolation, the magnitude of $\[T/t_S\]$ for these proportions can be determined from table 2 and multiplied by the values of t_S and $\[T_f\]$ for the design. This product should be equal to the design value of P_f . For the example

$$\overline{\sigma}_{\rm f} = 34 \text{ km}$$
i

$$\frac{\overline{t}}{tg} = 1.377$$

and

$$\bar{\sigma}_{f} = \frac{\bar{t}}{t_{g}} t_{g} = 34(1.377)(0.064)$$
= 3.0 kips per inch

which agrees with the design value of P_1 originally assumed.

Langley Memorial Aeronautical Laboratory
National Advisory Committee for Aeronautics
Langley Field, Va., March 16, 1948

APPENDIX

DEVELOPMENT OF DIRECT-READING DESIGN CHARTS

In order to be direct-reading, a design chart needs to incorporate all the principal design conditions into its parameters. Previous design charts, such as those of references 4 to 6, have incorporated only the design conditions of compressive load per inch of panel width P_1 and effective length of panel L/\sqrt{c} in the parameter Consequently, such charts cannot be used to find a design directly if a particular skin thickness is specified. Because of the trend toward higher speeds and thinner wings and the accompanying requirement of a fairly thick skin to provide high torsional stiffness, the skin thickness tends to become one of the principal design conditions, and hence it too should be incorporated into the parameters used for design charts. In reference 7 a suitable parameter incorporating the skin thickness was found to be P_1/tg . The design charts of references 4 to 6 may be converted, therefore, to incorporate the skin thickness into their parameters if values of $P_{+}/t_{\rm S}$ are found which correspond to the values of $\overline{\sigma}_f$ and $\frac{P_1}{L/\sqrt{c}}$ given by the curves of the charts. These values of P₁/t_S are established by the fact that both the stress and the intensity of loading Pi represented by the curves of these previous charts always correspond to failure of the panel. In other words, on any curve in the charts

$$\bar{\sigma}_{f} = \frac{P_{1}}{\bar{f}}$$

where \bar{t} is the cross-sectional area per inch of panel width expressed as an equivalent or average thickness.

If both sides of this equation are multiplied by \overline{t} and divided by the skin thickness tg (values of \overline{t}/tg are tabulated in references 4 to 6 for the panel proportions covered by the associated design charts), values of the parameter P_1/tg are

$$\frac{P_1}{t_S} = \overline{\sigma}_f \frac{\overline{t}}{t_S}$$

The curves of the previous design charts (references $\frac{1}{2}$ to 6) accordingly can be replotted either with their abscissa $\frac{P_1}{L/\sqrt{c}}$ replaced by P_1/t_S (figs. 7 to 11) to give the same type of plot used for the

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summary charts of reference 6, or with the ordinate σ_f replaced by P_1/t_S while $\frac{P_1}{L/\sqrt{c}}$ is retained as abscissa (figs. 2 to 6). Any point on one of the replotted curves then represents a panel design which satisfies the three conditions of intensity of loading, skin thickness, and effective length of panel. A locus of points for minimum weight can be found, moreover, by a systematic study and can be indicated on the charts, so that designs having the proportions required for minimum weight may be found directly.

The direct-reading design charts presented herein as figures 2 to 6 are cross-plotted, as just described, from figures 12 to 16 of reference 6 for 758-T aluminum-alloy straight-web Y-stiffened panels.

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TABLE 1.- MATERIAL PROPERTIES AND PROPORTIONS OF 758-T ALUMINUM-ALLOY PANELS HAVING STRAIGHT-WEB Y-SECTION STIFFENERS

For details of stiffener proportions and diameter and pitch of rivets, see tables 2 to 6; for panel dimensions, see fig. 1]

b	sterial properties	
	Aluminum alloy	σ _{cy} (ksi)
Sheet	758-T Alclad	67.3
Stiffeners	758-T	78.2
	Proportions	
. ਜ਼ ਚੁੱਲ = <u>bs</u> ਚੁੱਲ =	$0.56 \frac{H}{t_W} - 0.89$ $1.79 \frac{b_W}{t_W} + 1.6$ $\frac{28}{t_S} - \left(0.58 \frac{H}{t_W} + 3.7\right) \frac{b_W}{t_S}$	
S =	$0.5 \frac{b_8}{t_8} + \left(0.52 \frac{b_W}{t_W} + 2.3\right)_{1}^{t}$	<u>w</u> ≅s

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		- PANEL	FR OPER	ries [5	= 0.40;	: E₩ = 1	9.5; b w	= 1.OL;	tr = 1.0	6; b w =	0.94;	^보 로 = 2.1? 타방	5; by = 0	0.69; ₹	=1; d	= 1.5;	В = 4.
	_	18	19	20	21	22	25	ᆀ	25	26	27	28	29	30	31	32	33
1 2		1.467	1.512 1.497 1.462	1.527 1.512 1.497	1.542 1.526 1.512	1.557 1.541 1.526 1.511	1.571 1.555 1.539	1.585 1.568 1.553 1.518	1.598 1.582 1.566	1.612 1.595 1.579	1.624 1.608 1.591	1.637 1.620 1.604	1.619 1.632 1.616	1.644	1.656 1.656	1.685 1.667 1.650 1.635	1.678
27 27 28		1.429	1.469 1.456 1.444	1.458 1.458 1.446	1.497 1.484 1.472 1.460	1.455	1.525 1.511 1.498 1.486	1.538 1.524 1.511	1.557	1.595 1.579 1.564 1.550 1.536	1.591 1.576 1.562 1.548	1.555 1.550 1.560	1.586 1.572	1.597 1.583 1.569	1.605 1.594	1.635 1.605 1.591	1.636 1.636
32		1.418 1.407 1.397	1,432	1.446	1.460	1.465 1.473 1.461	1.474	1.511 1.498 1.466	1:511	1:55	1.535 1.522 1.510	1:537	1.558	1.569	1.567 1.567 1.543	1.591	1.602 1.589 1.576 1.564
32 33		1.388	1.401	1.414	1.427	1.440 1.440 1.430 1.420	1.452 1.442 1.432	1,464 1,464 1,454 1,454	1.476 1.465 1.455	1.488	1.510 1.499 1.488 1.478	1.510 1.499 1.489	1.533 1.521 1.510	1.532 1.521 1.510	1.543 1.531 1.521	1.578 1.565 1.553 1.542 1.531	1,564
35		1.370 1.361 1.353 1.346	1.352 1.374 1.366 1.358	1.395 1.386 1.378	1.199 1.190 1.382	1.402 1.402 1.394	1.423	1 434 1 425 1 416	1.436 1.436 1.427	1.457	1.468 1.458 1.449	1.469	1.500 1.489 1.479	1.500	1.500 1.500 1.490	1.510	1.552 1.541 1.530 1.520
37 38 39	_	1.338	1.350	1.370 1.362 1.355 1.348	1.37	1.385	1.405 1.397 1.389	1.400 1.392 1.369	1.419	1.436	1.440	1.451	1.470 1.461 1.452	1.471	1 441	1.500 1.491 1.482	1.510 1.500 1.491
122 113	± 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	1.324	1.326 1.323 1.311 1.300	1.334	1.359 1.345 1.333 1.321 1.310	1.385 1.378 1.370 1.356 1.343 1.331	1.397 1.389 1.367 1.367 1.341 1.341 1.341	1.378 1.364 1.351 1.339	1.403 1.388 1.374	1.417 1.398 1.384	1.432 1.424 1.408 1.394 1.380	1.434 1.418 1.403	1.428	1.454	1.472 1.463 1.447 1.432 1.417	1.456 1.441	1.465 1.450 1.455
46 48 50		1.259 1.279 1.270		1.322 1.310 1.300 1.289	1.321 1.310 1.100 1.290	1:309	1.350		1.374 1.361 1.349 1.327 1.327 1.308 1.309	1.371	1.368	1.390 1.377 1.365	1.399 1.386 1.374	1.408 1.395 1.383	1:404	1.426	1.421
52 56 56		1.261 1.252 1.245	1,250 1,271 1,261 1,254 1,247	1.250 1.272 1.263 1.256 1,248	1.281	1.299 1.290 1.282	1.309 1.299 1.290	1.718 1.708 1.299 1.291 1.271 1.271	1.327	1.326 1.326 1.317 1.308	1.335	1.355	1.363 1.352 1.342	1.371 1.360 1.350 1.340	11.369	1:300	1.396
65		1.237 1.231 1.221	1.239	1.255 1.248 1.238	1.265 1.257 1.246	1.262 1.271 1.266	1.252 1.274 1.263 1.253 1.243	1.291	1.299 1.291 1.279 1.269	1.308 1.299 1.287	1.316	1.324	1.332	1.340 1.331 1.318	1.358 1.348 1.319	1.35	1.364
63 66 69 72		1.212 1.204 1,196	1.212	1.238 1.229 1.220 1.212	1.237 1.228 1.220	1,255 1,245 1,236 1,227	1.253	1.261 1.251 1.242 1.234	1.269 1.259 1.249 1.241	1.276 1.266	1,284	1.303 1.291 1.281	1.299 1.265	1 306	1.314	1.321	1.328
72 78 81		1.189 1.183 1.177	1.197 1.190 1.184	1.204	1.212 1.205 1.198	1.212	1.226	1.225	1.233	1.248	1.255	1.262 1.253 1.245 1.237	1.269	1.295 1.265 1.266	1.262 1.262 1.264	1.209 1.209 1.279	1.206 1.255 1.256
84		1.171	1.178	1.191 1.185 3.172 3.122	1.192 3.369 3.314	1.205 1.198 3.571	1.212	1.218 1.212 3.979	1.225 1.218 4.185	1.232	1.236 1.231 4.607	A Rat	1.252 1.244 5.038	1.258 1.250 5.256	1.256	1.271 1.262 5.700	1.277 1.269 5.922
27 25 26		2.788 2.741 2.697 2.655	2.979 2.931 2.881 2.838	3.122 3.071 3.022	3.314 3.264 3.210	14 993 54 49 54 49	715 650 5600	3.979 3.914 3.856	4.122 4.059 1.998	4.398 4.330 4.265 4.203	4.541 4.470 4.406	4.752 4.683 4.613	4.965 4.895	5.256 5.181 5.110 5.037	5.477 5.401 5.323 5.249	5.700 5.619 5.539 5.468	5.839
27 28 29		2.612 2.572 9.534	2.793 2.751 2.709	2.976 2.932 2.855	3.162 3.118 3.072	3.304	545 445 396	3.797 3.741 3.685 3.634	3.540 3.556 3.670	4.083	4.346 4.284 4.225	4.551 4.488 4.428	4.695 4.695	4.971 4.901 4.834	5.178 5.110 5.041	5.391 5.322 5.252	5.607 5.537 5.465
1 30 1		2.496 2.461 2.429	2.669 2.533 2.596	2.847 2.805 2.767	3.026 2.983 2.943	3.257 3.269 3.164 3.123	3.350 3.350 3.303	\$,583 3,535 3,487	3 775 1	3.972 3.918 3.867	4.166	4.367	1567 1509 1509 1509 1509 1509 1509 1509 1509	4.770 4.650 4.594	4,977 4,916 4,854	5.118	5.395 5.359
STATE OF THE PERSON NAMED IN		2.393	2.558	2.728	2.902 2.865 2.828	3.081 3.039 3.000	3.260	7.355 7.355 7.355 7.351	25 25 25 25 25 25 25 25 25 25 25 25 25 2	1.816	4.058 4.005 3.957	4.195 4.195 4.145	4.39k 4.343	4.536	4.791 4.738 4.678	5.055 4.996 4.937	5.199 5.139
55. 36 37		2.330 2.300 2.274 2.243	2.462		2.756	2.961 2.926 2.886	\$177 3.136 3.096		3.537 3.436	720 3.672 3.627	957 907 957 3512	4.098 4.000	4.234	4.464	4.566	4.821	5.077 5.020 4.963
37 38 39 40	<u>5</u>	2.243 2.216 2.169 2.141	2.398 2.370 2.341 2.287	2.558 2.558 2.459 2.458	2.722 2.657 2.656	2.855	3.059 3.022 2.984 2.917	7.197 7.154 7.140 7.086	3.407 3.368 3.128 3.252 3.180	3.567 3.542 3.501 3.423 2.349	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	3.955 3.965 3.862	4.138 4.089 4.045	4.326 4.276 4.231	4.518 4.467 4.415 4.322	.660 .606	4.904 4.851 4.797
\$ F.E	*5	2.092	2.237 2.190 2.141	2.356 2.332 2.257	2.656 2.594 2.539 2.484	2.754 2.692 2.635 2.511	2.854 2.790 2.734 2.678	3.015 2.949 2.886	3.112 3.047	3.270		1005 1005 1005 1005 1005 1005 1005 1005	3.956 3.870 3.788	4.046 3.963 3.884	4.232	4.506 4.415 4.321	4.601 4.505
\$ 50 50		2.005 1.967 1.928	2.061	2.236	2.432 2.384 2.335	- 5-742 -	2.626	9 828	2:927	3.212 3.052	3.33	1:270	3:强	3.663	1.060 3.967	239	1:36
56 58		1.559 1.555 1.522	2.015 1.983 1.950 1.912	2.156 2.112 2.078	2.291 2.291 2.245 2.210	2.430 2.385 2.341	2.573 2.524 2.481	2.774 2.719 2.669 2.624	2.870 2.819 2.766	3.024 2.971 2.918	3.182 3.122 3.066	3.337 3.281 3.218	3.571 3.502 3.436 3.374	3.663 3.598 3.532	3.635 3.694	4.002 3.927 3.858	4.173 4.096 4.026
2000 amposes		1.795 1.749 1.707	1.869	2.038 1.988 1.943	2.169 2.112 2.064	2.103 2.244 2.169	2.375 2.375 2.318 2.260	2.579 2.510 2.451	5 (44)	2.789	2.935	3.061 3.064	3.235 3.235 3.154 3.078	3.598 3.532 3.472 3.363 3.222	1.612 1.541 1.56 1.369	3.696 3.606	3.35
69 72 75		11.669	1.750	1.896	2.016 1.972 1.925 1.889	2.139 2.034 2.042	2.260 2.211 2.160	2.579 2.510 2.451 2.336 2.287	2.567 2.525 2.463 2.412	2.557	2.792 2.732 2.672	2.937 2.868 2.886	3.078 3.008 2.944	3.222 3.350 3.677	3.369 3.296	3.520 3.444 3.368	3:763 3:573 3:516
72 75 78 31		1.610 1.597 1.567 1.538 1.507	1.705 1.669 1.638 1.606	1.774 1.741 1.705	1.889 1.849 1.815	2.001 1.948 1.918	2.118 2.075 2.032	2.237 2.187 2.149	2.361 2.308 2.262	2.467 2.433 2.366	2.610 2.555 2.505	2.686 2.686 2.628	2.879 2.820 2.761	3.011 2.951 2.890	3.153 3.084 3.021	3.290 3.227 3.156	3.438 3.366 3.301
23		4 . 393 4 . 361 4 . 329	4.650 4.650 4.616	4.974 4.940	5.266 5.232 5.197 5.160	5.560 5.524 5.468	5.846 5.809 5.771	6.133 6.094 6.058 6.021	6 407	6.725 6.586 6.647 6.609	7.003	7.299 7.247	7.585 7.545 7.506	7.879 7.840	8.158 8.118	8.444	8.708 8.667
27 27		1.527	4.584	4.905 4.871 4.838	1111	5,451	2.735	E DEE	6.390 6.352 6.314 6.278	6.571	6.925 6.887 6.851	7.221 7.151 7.144	1:133	7.501 7.760 7.721	8.077 8.037 7.997	8.361 8.323 8.281	5.628 5.555 8.546
26 29 30		4.235 4.206 4.175 4.147 4.121	1521 1521 1458 1458	4.807 4.775 4.744	5.094 5.063 5.029	5.383 5.350 5.316	5.632 5.598	5.949 5.913 5.878	6.243 6.206 6.171	6.498 6.463	6.776 6.738	7.106 7.069 7.031	7.391 7.351 7.313 7.277	7.643 7.604	7.959 7.919 7.881	8.243 8.203 8.165 8.125	8.468 8.430
323		4.121 4.090	4.400 4.369	1,654 4,651 4,622	4.966 4.955	5.283 5.253 5.221 5.169 5.159	6598 6598 5595 5550 5550 5550 5550 5550 5550 5	6 886 1	6.135 6.101 6.066	6.392 6.357	6.702 6.667 6.632	7.031 6.995 6.957 6.921 6.858 6.853	7.277 7.239 7.203	7.568 7.530 7.494	7.844 1	8.125 8.087 8.051	6.353 6.353 6.314
35		4.056 4.037 4.011	#:313 #:255	4.622 4.593 4.566	4.905 4.876 4.845	5:159 5:128	2 1// 1	5.512 5.780 5.747 5.713 5.650 6.50	6.073 6.000 5.966	6.324	6.598 6.564 6.529	6.888 6.853 6.818	7:176 7:176 7:096	7:57 7:57	7:734	8.013 7.976 7.941	8.278 8.240 8.204
57 38 39		120 090 056 057 011 1095 959 959 959 117 117 117 117 117 117 117 117 117 11	4.261 4.233 4.203	4.535 4.509 4.454	4.789 4.759	5.100 5.066 5.041	5.374 5.344 5.314 5.264	5.650 5.620 5.569	5.933 5.903 5.873	6.222 6.192 6.157	6.813 6.776 7.78 6.672 6.662 6.662 6.664 6.664 6.664 6.462 6.462 6.462 6.462 6.462 6.462	6.785 6.751 6.717	7.063 7.029 6.994	7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.	7.623 7.566 7.556	8.057 8.051 8.014 7.976 7.904 7.870 7.870 7.835 7.709 7.729 7.665	8.167 8.130 8.095
49 474	ę s	3.969 3.864 3.817	4.182 4.132 4.084	4,458 4,464 4,355	* 735	5.010 1.955 861	5,284 5,228 5,174	5.557	5.845	6.126 6.065 6.005	6.460 6.335 6.375	6.655	6.963	7.239 7.179 7.111	7.519	7.755	4.059 7.959 7.959
16 15 S		3.772 3.729 3.729	1.039 3.991	622 1 593 1 566 1 538 1 509 1 484 1 458 1 458 1 155 1 260 1 210	4 996 996 996 4 996 4 845 4 845 4 845 4 759 4 759	100 5 066 6 010 8 001 8	5.228 5.174 5.117 5.067 5.015 4.956 4.915	5557 5557 5557 5557 5557 5557 5557 557	666663 13016 1	5.947 5.891	6:335 6:275 6:212 6:156 6:058	6.456	7.239 7.209 7.209 7.100 7.1029 7.063 7.029 6.839 6 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	7.050 6.988 6.989 6.868	7.806 7.767 7.676 7.660 7.660 7.660 7.650 7.554 7.519 7.387 7.319 7.257 7.151	7.595 7.533 7.465 7.467	8.508 8.430 9.314 8.3913 8.3913 8.3913 8.3913 8.3913 9.391
524		2.646 2.605	3.508 3.860	4 210 4 167 4 128 4 063	4.320	4.699 4.654 4.612	4.966	5.230 5.179 5.131 5.057	5.503	5.776	6.642 5.890	6.962	6.592	6.868	7:236	7.346	7.663
58 60		3.531 3.469	\$:789 3:747	4.128 4.083 4.046 4.003	¥.506	1.56L 1.525	4.624	5.047 5.042	§:353	5.627 5.575	5:885 5:833	6.156	6.123 6.369	6.696 6.643	7.017 6.959 6.906	7.219 7.176	7 543 7 485 7 461
69		:33	3.646 3.592	7 640 1	4.091	4.401 4.346 4.287	4.655	4.910 4.846	5.174	2:203 5:334 5:353	5.990 5.935 5.935 5.760 5.691 5.618	5.954	6.219 6.146	66977647747868 869776477474868	6.748	7.219 7.176 7.089 7.011 6.930	7:茲
STANA OROGENETURE E E ENCOROTANTANTO		77299	10091158 100	7.790 7.798 7.661 7.669 3.606	4,040 3,987 3,940 3,890 3,847	4.287 4.185 4.138	4.868 4.824 4.779 4.655 4.591 4.539 4.478 4.428 4.377 4.325	4.846 4.786 4.731 4.674 4.616	55555555555555555555555555555555555555	35650 54460 54600	5.557 5.493 5.427 5.366 5.311	2-512	£-873	6.269 6.201	7.017 6.959 6.906 6.826 6.768 6.769 6.597 6.524 6.456 6.385 6.321	6.859 (7.179 7.109 1.028 6.959 6.688
81 81		3.178 3.137	3.411 3.369	3.606	3.890 3.847	4.083	4:327	4.616 4.570	4.869 4.815	5.126 5.071	5.366 5.311	5.626 5.563	5.883 5.883 5.819	6.201 6.139 6.074	6.385 6.321	6.786 6.710 6.647 6.573	6.888 6.823



	3	Y-PANE	L PROPE	RTIES	w = 0.51	। ; <u>b</u> ₄ - :) 31 <u>pa</u>	-1.04;	<u>tr</u> t∰ = 1.0	ν6 : bμ =	0.94,	P = 2.13	; b y = 0	·69; [-1; d	- 2.0;	p - 6.0
तीहरू अन्याय		13	19	20	21.	22	23	24	25	26	27	28	29	30	31	32	33
24444488		1.749 1.728 1.708 1.689 1.671 1.654 1.638 1,623	1.770 1.749 1.729 1.710 1.692 1.674 1.658 1.642	1.792 1.770 1.750 1.750 1.752 1.694 1.678 1.662	1.812 1.790 1.770 1.750 1.731 1.714 1.697 1.681	1.832 1.810 1.789 1.769 1.750 1.732 1.715 1.699	1.652 1.629 1.606 1.768 1.769 1.751 1.734 1.717	1.871 1.848 1.827 1.807 1.787 1.769 1.751 1.734	1.889 1.866 1.845 1.805 1.766 1.769 1.752	1.907 1.854 1.862 1.842 1.822 1.803 1.785 1.768	1.901 1.850 1.859 1.839 1.820 1.802 1.785	1.941 1.918 1.896 1.875 1.855 1.818 1.818	1.958 1.954 1.912 1.891 1.871 1.852 1.834 1.652	1.974 1.950 1.925 1.907 1.887 1.864 1.649	1.989 1.966 1.944 1.923 1.863 1.864 1.864 1.829	2.004 1.951 1.959 1.917 1.698 1.679 1.661	2.019 1.996 1.974 1.952 1.932 1.912 1.893 1.875
ಕ್ಷಿಚ್ಚುಚಿತ್ರಗಳು		1.508 1.594 1.581 1.568 1.556 1.544 1.533 1.522 1.512	1.628 1.613 1.600 1.587 1.574 1.562 1.551 1.540 1.529	1.617 1.618 1.605 1.556 1.556 1.557 1.546 1.516	1.655 1.650 1.636 1.623 1.610 1.598 1.566 1.574 1.563	1.654 1.654 1.640 1.627	1.656 1.656 1.657 1.657 1.644 1.631 1.619 1.607	1.716 1.703 1.668 1.674 1.661 1.648 1.635 1.623	1.750 1.750 1.657 1.651 1.651 1.651 1.651	1.736 1.736 1.721 1.707 1.693 1.666 1.654 1.642	1.768 1.752 1.737 1.722 1.706 1.695 1.669 1.669	1.768 1.752 1.753 1.723 1.710 1.697 1.684 1.672	1.768 1.753 1.735 1.725 1.725 1.668	1.615 1.796 1.763 1.767 1.753 1.739 1.726 1.713	1.629 1.613 1.797 1.762 1.767 1.753 1.740 1.727 1.714	1.827 1.811 1.796 1.781 1.767 1.753 1.740 1.727	1.858 1.841 1.826 1.810 1.795 1.781 1.767 1.754
ನಿಕ್ಷಿ ಕ್ಷಣ	된 ts	1,502 1,483 1,466 1,450 1,420 1,407 1,394 1,383	1,519 1,500 1,462 1,466 1,450 1,456 1,450	1,536 1,516 1,498 1,461 1,465 1,451 1,437 1,437	1.553 1.553 1.551 1.497 1.465 1.465 1.450 1.457	1.591 1.589 1.589 1.589 1.589 1.485 1.485 1.485	1.596 1.585 1.584 1.526 1.526 1.519 1.465 1.452 1.439	1,600 1,579 1,559 1,541 1,505 1,492 1,475 1,465 1,452	1.574 1.574 1.555 1.536 1.581 1.506	1.631 1.609 1.589 1.552 1.535 1.535 1.504 1.490	1.657 1.645 1.623 1.603 1.565 1.546 1.532 1.517 1.503	1.660 1.637 1.617 1.597 1.579 1.561 1.530 1.515	1.674 1.651 1.610 1.592 1.574 1.558 1.542	1.665 1.665 1.665 1.665 1.567 1.554 1.559	1.679 1.657 1.657 1.636 1.617 1.599 1.562 1.566 1.551	1.692 1.670 1.649 1.630 1.632 1.554	1.705 1.665 1.662 1.662 1.656 1.556
54 55 56 56 56 57 77 77		1.372 1.362 1.347 1.321 1.321 1.320 1.299	1.356 1.375 1.346 1.375 1.346 1.334 1.331 1.300 1.291 1.281	1.399 1.368 1.373 1.359 1.346 1.331 1.322 1.311	1.356 1.356 1.371 1.358 1.333 1.322	11424 1158 1158 1158 1158 1158 1158 1158 115	1.427 1.411 1.395 1.381 1.366	1.455 1.440 1.421 1.427 1.393 1.379 1.366 1.354 1.353	1.454 1.452 1.415 1.415 1.415 1.305 1.377 1.365 1.353	1.45 1.45 1.45 1.45 1.40 1.38 1.375 1.36	52876 52876 52876 52876 528777 528777 528777 528	1.515 1.568 1.453 1.457 1.457 1.422 1.409 1.396	1.527 1.513 1.500 1.481 1.464 1.448 1.419 1.406	1.331	1.504 1.466 1.469 1.458 1.459 1.425	1.515 1.515 1.496 1.480 1.489 1.435	557-595 557-59
81 84 23 24 25 27 28 29		1,280 1,271 4,209 4,149 4,034 3,978 3,925 3,674	4.502 4.439 4.378 4.319 4.262 4.204	1.301 1.292 4.603 4.735 4.606 4.549 4.466 4.466	1.512 1.502 5.103 5.035 4.968 4.902 4.838 4.779 4.661	\$17.678 PASS	11335 5700 5700 5700 5700 5700 5700 5700 5	1.333 6.952 6.952 6.952 6.952 6.952 6.555	1 343 6 344 6 263 6 187 6 110 6 965 8 965	1.353 6.661 6.578 6.497 6.422 6.269 6.197	1.374 1.362 6.979 6.894 6.815 6.578 6.578 6.504 6.504	1.383 1.372 7.300 7.214 7.129 7.046 6.965 6.887 6.881	1.393 1.382 7.626 7.533 7.4362 7.280 7.280 7.281	1.403 1.391 7.951 7.857 7.682 7.682 7.598 7.517 7.434	1.415 1.400 8.275 8.165 8.095 6.005 7.916 7.633 7.746	1.422 1.410 6.603 6.509 6.417 8.328 8.237 6.152 8.066	1.431 1.419 8.934 6.636 8.796 8.650 8.561 8.470 8.383
20 M M M M M M M M M M M M M M M M M M M		7.825 7775 7.726 7.683 7.638 7.595 7.552 7.512	4.151 4.096 4.044 5.996 3.999 3.954 5.768 5.768 5.768 5.768	4,378 4,324 4,270 4,214 4,170 4,120 4,074 4,030 3,981	335558 33558 3356 3556 3556 3556 3556 35	947 4 826 5 24 4 774 4 665 6 616 4 5615 8 667	237 5175 116 056 998 4 889 4 889 4 785 4 785	5.172 5.172 5.172 5.114	200 0 5 1 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5	6.550 5.550	6.533 6.360 6.291 6.224 6.156 6.092 6.032 5.970 5.908	6.739 6.554 6.593 6.521 6.456 6.386 6.386 6.261 6.198	7.7044 7.7086 7.	7.358 7.281 7.202 7.131 7.055 6.986 6.917 6.852 6.785	7.671 7.512 7.512 7.435 7.362 7.287 7.217 7.150 7.052	7.983 7.803 7.621 7.743 7.666 7.592 7.520 7.447 7.378	8.216 8.133 8.059 7.978 7.901 7.828 7.753 7.683
35990244680024680	h ts	1775 1775 1775 1775 1775 1775 1775 1775	3.566 3.492 3.424 3.555 3.270 3.170	3.938 3.897 3.736	4.200 4.157 4.071 3.987 3.831 3.760 3.688 3.688 3.563	19 10 10 10 10 10 10 10 10 10 10 10 10 10	4.687 4.591 4.502 4.410 4.332 4.251 4.174 4.101	4.418 4.342 4.271	2853 2275 2275 2275 2375 2575 2575 2575 25	5.565 5.512 5.463 5.198 5.107 5.107 4.926 4.641 4.760	5.790 5.678 5.575 5.575 5.376 5.376 5.376 5.376	6.136 6.077 5.958 5.652 5.744 5.44 5.448 5.359 5.268	6.124 6.164 6.124 6.016 5.511 5.516 5.526 5.526	6.551 6.415 6.296 6.192 6.085 5.982 5.788	7.014 6.949 6.624 6.700 6.579 6.466 6.355 6.255 6.055	7.308 7.243 7.115 6.989 6.865 6.751 6.540 6.326	7.612 7.540 7.409 7.281 7.156 7.033 6.920 6.505 6.504
65 66 69 72 75 78 81		2.669 2.751 2.669	3.062 3.009 2.935 2.664 2.603 2.740 2.622 2.623 2.573 2.518	2.072 2.072 2.072 2.072 2.072 2.071 2.073	5625 5625 5625 5627 5627 5628 5628 5628 5628	1557 1547 1547 1548 1548 1548 1548 1548 1548 1548 1548	3.695 3.695 3.695 3.695 3.630 3.558 3.472 3.403 3.334	4.198 4.032 3.937 3.852 3.765 3.663 3.534 3.468	4 166 4 166 4 166 7 984 7 820 7 846	4.665 4.502 4.595 4.299 4.208 4.121 4.033 3.957 3.880	930 650 744 635 530 531 257 257	5.182 5.100 4.985 4.873 4.766 4.663 4.572 4.479 4.384	10000000000000000000000000000000000000	25.607 5.466 5.363 5.250 5.365 5.365 5.365 5.365	5.953 5.963 5.740 5.614 5.492 5.270 5.270 5.270	6.25 6.130 5.998 5.755 5.511 5.503 5.300	6.591 6.491 6.491 6.595 6.555 6.555 6.555
24 25 26 27 26 27 28 29		6.0524 6.0524 5.053 5.05	6.410 6.372 6.311 6.279 6.250	2.700 6.822 6.759 6.755 6.695 6.663 6.663	7.210 7.177 7.146 7.113	3.076 7.594 7.562 7.596 7.464 7.453	7.976 7.972 7.909	8.361 8.327 6.295 6.262 8.228 6.196 6.163	5.671 8.739 8.673 8.639 8.639 8.573 8.573 8.444 8.444 8.444	3.880 9.128 9.094 9.060 9.028 8.994 8.960 8.927 8.895 8.863	# 085 19 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	9.878 9.845 9.809 9.777 9.744 9.710 9.678 9.612	10.25 10.22 10.18 10.15 10.12	4.837 4.744 10.60 10.57 10.53 10.50 10.47 10.43	4.967 10.99 10.96 10.93 10.89	5.203 11.36 11.33 11.30 11.26 11.23 11.20	5. 31 11.70 11.67 11.64 11.57 11.50 11.50
31 32 33 35 35 35 37 38		5.814 5.814 5.758 7.758 7.758 7.758 5.617 5.619 5.594 7.567	6.160 6.132 6.104 6.074 6.075 6.019 5.991 5.963 5.883	6.5511 6.5511 6.452 6.453 6.453 6.453 6.336 6.338 6.335 6.150 6.051 6.051	8511988 551988 550885 5	7.537 7.537 7.537 7.537 7.535 7.535 7.535 7.535 7.535 7.535 7.535	7.812 7.812 7.781 7.716 7.665 7.662 7.591 7.560 7.590 7.590 7.590	8.098 8.067 8.067 8.003 7.977 7.942 7.910 7.880 7.848	8.475 8.444 6.412 8.381 8.317 8.285 8.255	8.863 8.829 8.797 8.766 8.734 8.668 8.668 8.638 8.606	9.128	9:513 9:513 9:479	10.02 9.952 9.954 9.917 9.854 9.850 9.7852 9.7852	10.37 10.33 10.30 10.27 10.23 10.20	10.67 10.76 10.76 10.69 10.63 10.59 10.56 10.50 10.46	11.11 11.06 11.06 11.07 10.96 10.96 10.86 10.86	11.40
PROSESTER CONTRACTOR	tg	55555799 55555799 555555555555555555555	5.782 5.730 5.683	5.950	6.367	7.097 7.067 7.008 9599 6.8990 6.798 6.587 6.587 6.587 6.587	7:36 7:36 7:21	7.848 7.818 7.759 7.759 7.643 7.587 7.422 7.371 7.422 7.371 7.1267 7.193 7.193	8.351 8.317 8.317 8.255 6.223 8.194 8.132 8.132 8.137 8.013 7.557 7.576 7.767	8.576 8.514 8.536 8.336 8.336 8.336 8.277 8.220 8.163	00000000000000000000000000000000000000	9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	79999999999999999999999999999999999999	10.01 10.01 9.914 9.879 9.820 9.758 9.697 9.637	10.37 10.30 10.24	10.80 10.73 10.67 10.61 10.49 10.42 10.36 10.36	11.17 11.14 11.08 11.01 10.95 10.89 10.82 10.76 10.70
50 50 50 50 50 50 50 50 50 50 50 50 50 5		4.981 4.921 4.868 4.813 4.761	557.1857.1856 557.1857.1856 557.1857.1856 577.18	5.831 5.746 5.683 5.622 5.556 5.501	66.178 66.178 66.178 66.179 773.6 773.6	6.537 6.537 6.537 6.531 6.331 6.355 6.100	7.159 7.1053 7.0532 9.599 6.6553 6.6553 6.6553 6.6553	7.050 6.979 6.910 6.843	7.767 7.756 7.679 7.629 7.479 7.479 7.334 7.265 7.198 7.134	8.578 8.575 8.575 8.575 8.575 8.105	0.3357 0.5577 0.557.4609 0.557.4609 0.557.66	8.839 6.782 8.727 8.647 8.567 6.468 8.411 8.341 6.268	9.006 8.926 8.847 8.770 8.694 8.621	9.758 9.697 9.637 9.578 9.581 9.381 9.297 9.135 9.059 8.966 8.909 8.836	10.11 10.05 9.993 9.933 9.877 9.818 9.650 9.566 9.489 9.329	10.30 10.24 10.10 10.01 9.929 9.846 9.656 9.666	10.52 10.13 10.35 10.27 10.16
81 84		4.713 4.662	5.049 4.992	5:357	5.736 5.678	6.086 6.021	6.429 6.370	6.780 6.720	7.134 7.068	7.492 7.426	7.906 7.836 7.763	5.192 5.125	5.545 5.476	8.909 5.836	9.329 9.258 9.179	9.610 9.536	9.942 9.868



TABLE 4	Y	- PANEL	PROPERT	IES É	=.0.63;	<u>b</u> A = 9.	3; b¥ =	1.04; է	L = 1.06	; <u>pr</u> =	0.94; t	Z = 2.13	, bp = 0	.691 E	= 1; d	-1.8;	p = 6.1
2012		18	19	20	21	22	25	24	25	26	27	28	29	30	31	52	33
20 m 20 m	_	2.059 2.031 2.005 1.950	2.080 2.059 2.033 2.008 1.984	2.115 2.067 2.060 2.035 2.010	2.142 2.113 2.056 2.061 2.036	2.167 2.139 2.112 2.086 2.061	2.192 2.164 2.136 2.110 2.085	2.216 2.188 2.160 2.134 2.103	2.240 2.211 2.184 2.157 2.152	2.254 2.254 2.266 2.150 2.154 2.150	2.265 2.255 2.228 2.201 2.176	2.306 2.277 2.249 2.252 2.197	2.327 2.297 2.270 2.243 2.217	2.347 2.318 2.290 2.263	2.366 2.337 2.309 2.262 2.257	2.385 2.357 2.328 2.301 2.276	2.404 2.375 2.347 2.347 2.120 2.294
26 29 30 31		1.956 1.934 1.912 1.692 1.872 1.653	1.961 1.939 1.918 1.898 1.679	1.967 1.965 1.944 1.924 1.904	2.013 1.990 1.969 1.948 1.929	2.015	2.062 2.039 2.017 1.996 1.976 1.957 1.938	2.065 2.062 2.040	2.108 2.085 2.062 2.041 2.021	2.063	2.151 2.126 2.106 2.064 2.063 2.043	2.172 2.149 2.126 2.104 2.084	2.169 2.169 2.146 2.125 2.104	2.213 2.189 2.166 2.144 2.123	2.232 2.208 2.165 2.163 2.142	2.276 2.251 2.227 2.205 2.152 2.161	2.298 2.269 2.269 2.245 2.200 2.179 2.158
507 507 507 507 507 507 507		1.853 1.835 1.818 1.801 1.785 1.770 1.755	1.661 1.643 1.626 1.610 1.794	1.856 1.851 1.851 1.818 1.818 1.803	1.910 1.892 1.874 1.858 1.842 1.826	1.973 1.953 1.953 1.915 1.898 1.881 1.864	1.957 1.938 1.920 1.963 1.887	1.999 1.979 1.960 1.942 1.925	2.001 1.982 1.964 1.946 1.929 1.913	2.022 2.003 1.985 1.967 1.950	2.024 2.025 1.958 1.950 1.954 1.954	2.064 2.044 2.025 2.007 1.990	2.063 2.065 2.045 2.027 2.009	2.045 2.025 2.026 2.026 2.026	2.122 2.102 2.051 2.054 2.047 2.029	2.140 2.130 2.101 2.065 2.065 2.047	2.158 2.138 2.120 2.100 2.082 2.065 2.048
59 40 42 44 46 46	ŧ3	1.727	1.794 1.779 1.765 1.751 1.725 1.677 1.656 1.635	1.755 1.774 1.747	1.797 1.769 1.744 1.720	1.864 1.849 1.834 1.819 1.791 1.765 1.741	1.855 1.840 1.812 1.786 1.761	1.892 1.877 1.861 1.833 1.806 1.781	1.897 1.852 1.853 1.826 1.801	2.085 1.967 1.950 1.950 1.975 1.877 1.845 1.820	1.892 1.865 1.838	1.990 1.973 1.957 1.941 1.911 1.883 1.857 1.857	1.992 1.976 1.959 1.950 1.962 1.875	1.995 1.979 1.948 1.919 1.892	2.013 1.997 1.966 1.937 1.910	2.031 2.014 1.983 1.954 1.927	2.661 1.971 1.944
50 554 555 556		1.655 1.614 1.596 1.578 1.546	1.559	1.699 1.677 1.656 1.637 1.619 1.601	1.698 1.677 1.657 1.658 1.620	1.696 1.676 1.657 1.639 1.639	1.736 1.716 1.695 1.676 1.657 1.640	1.737 1.735 1.714 1.695 1.676	1.751	1.795 1.772 1.751 1.751 1.711	1.791 1.769 1.748 1.726	1.786 1.786 1.765 1.745	1.803 1.782 1.762	1.867 1.843 1.820 1.799 1.778	1.884 1.860 1.837 1.815	1.901 1.676 1.653 1.651 1.610	1.869 1.847 1.826
56 65 66 69 78		1.511 1.511 1.492 1.474 1.458	1.566 1.551 1.529 1.510 1.475	1.565 1.569 1.528 1.528 1.509	1.60# 1.58£ 1.555 1.545 1.586 1.508	1.562 1.562 1.543 1.524	1.624 1.601 1.579 1.559	1.641 1.641 1.518 1.597 1.575	1.676 1.676 1.658 1.658 1.658 1.612 1.591	1.675 1.675 1.651 1.628 1.607	1.710 1.692 1.667 1.644 1.682 1.602	1.726 1.708 1.683 1.659 1.657	1.743 1.725 1.699 1.693 1.693	1.759 1.740 1.714 1.690 1.667	1.775 1.756 1.755 1.705 1.682 1.660	1.790 1.772 1.745 1.720 1.696 1.674	1.806 1.757 1.759 1.754 1.711 1.688
75 78 81 84		1.428 1.415 1.402	1.459 1.444 1.430 1.417	1,509 1,491 1,475 1,460 1,446 1,432	1.491 1.476 1.461 1.447 7.202	1.491 1.476 1.462 7.627	1.506 1.491 1.476	1.521 1.521 1.506 1.491	1.555 1.536 1.520 1.505	1.557 1.558 1.551 1.551 1.519	1.585 1.565 1.548 1.535	1.579 1.562 1.546 10.25	1.612 1.594 1.576 1.560	1.626 1.607 1.590 1.573	1.640 1.621 1.603 1.586	1.654 1.635 1.616 1.599	1.668 1.645 1.629 1.612
25 25 26 27 28		5.872 5.805 5.738 5.672 5.611	6.339 6.284 6.214 6.145 6.027 6.011	6.778 6.702 6.625 6.557 6.484 6.415 6.348	7.122 7.045 6.972 6.897	7.547 7.468 7.390 7.313 7.840	7.975	8.405 8.319 8.237 8.156	6.637 6.752 6.565 6.560 6.560 6.560 6.140 6.140	9.366 9.184 9.184 9.010 9.010 9.010 9.010 9.010	9.710 9.621 9.539 9.443	10.15 10.06 9.965 9.877 9.877	10.59 10.50 10.51 10.51 10.52	11.04 10.94 10.85 10.75	11.56 11.48 11.35 11.29 11.19 11.10	11.95 11.83 11.77 11.64	12.36 12.26 12.15 12.05 11.95 11.85
29 30 31 32 33 34 35		5.469 5.430 5.372 5.316 5.262	5.946 5.882 5.768 5.761 5.703	6.348 6.283 6.219 6.154 6.094 6.033	6.754 6.687 6.554 6.489 6.487 6.363	7.166 7.094 7.026 6.958 6.891 6.823	7:52 7:657 7:581 7:507 7:134 7:364 7:296 7:226	7.999 7.922 7.848 7.776 7.631 7.550	8.421 8.340 8.264 8.190 8.115 8.042	8.846 8.763 8.685 8.529 8.454	950	9.708 9.615 9.531 9.452 9.372 9.372	10.13 10.05 9.962 9.878 9.793 9.714	10.57 10.45 10.39 10.31 10.25 10.14	11.00 10.91 10.82 10.74 10.65	11.35	11.79 11.70 11.61 11.51 11.43
75 76 77 77 79 40 44	_	5.207 5.154 5.104 5.053 5.004	5.587 5.533 5.477	975 975 915 915 915 915 915 915 915 915 915 91	6.363 6.305 6.246 6.167 6.130 6.076	3.335		7.430	7.972 7.900 7.831 7.765 7.698 7.634	8.309 8.239 8.171	8.79 ⁴ 8.72 ⁴	100000 100000 100000	9.556 9.477 9.401 9.326	9.576 9.896 9.819 9.745 9.670	10.57 10.48 10.40 10.32 10.24 10.16	10.91 10.83 10.74	11.25 11.17 11.09 11.09
146	t _s	4.955 4.865 4.776 4.668 4.606 4.526	5.374 5.323 5.226 5.130 5.040 4.955 4.867	5.696 5.592 5.493 5.399 5.307 5.217	5.965 5.863 5.762 5.668	6.657788556 6.657188556 6.65514786 6.6666666666666666666666666666666666	6.844 6.727 6.616 6.505 6.401	7.236 7.116 6.998 6.855 6.773 6.668	7.634 7.507 7.386 7.270 7.156 7.044	7.904 7.904 7.775 7.657 7.420	6.579 6.509 6.436 8.702 8.175 8.045 7.925 7.808	6.544 6.704 6.571 6.443 6.316 8.191	9.250 9.112 8.976 8.841 6.712 8.585	9.670 9.521 9.377 9.239 9.108 8.978	10.09 9.953 9.7647 9.508 9.377 9.248	10.56 10.50 10.35 10.20 10.06 9.914 9.774	10.92 10.77 10.61 10.47 10.32 10.18
50 50 50 56 56 60		4.458 4.376 4.308 4.237 4.175	1.727 1.637 1.564	5.134 5.053 4.970 4.895 4.818	5.575 5.484 5.396 5.311 5.155	5.538 747 5.559 5.494	6.298 6.198 6.105 6.010 5.923 5.840	6.565 6.470 6.372 6.367 6.061	6.836 6.736 6.640	7.205 7.101 7.002 6.901	7.593 7.561 7.471 7.371 7.258	8.074 7.959 7.848 7.739 7.634 7.484	8.460 8.343 8.229 8.119 8.012	8.851 8.732 8.611 8.498 8.383	9.248 9.121 8.997 8.883 8.765	9.643 9.514 9.388 9.266	10.04 9.912 9.784 9.660 9.539
66 69 72 75 75	:	3.990 3.903 3.524 3.744 3.672	#.391 #.298 #.203 #.121 #.038 3.958 3.861	4.615 4.615 4.517 4.421 4.335 4.252 4.173	5.155 5.043 934 4.653 4.640	5.174 261 157 5.050 8.558 4.768	5.717 5.596 5.483 5.272 5.272	5.943	6.406 6.279 6.154 6.039 5.920 5.812 5.707	67865	7.121 6.982 6.846 6.718 6.594 6.574	7.484 7.336 7.197 7.067 6.940 6.611	7.853 7.703 7.561 7.483 7.285 7.160	8.068 7.917 7.775 7.636	8.438 8.284 8.111 7.992 7.855	8.979 8.814 8.651 8.497 8.353 8.214	9.756 9.188 9.029 8.865 8.719 8.570 8.425
81 83 24	_	3.604 3.534 7.833 7.806 7.780	3.861 3.809 8.194 8.174 8.149	8.508 8.781	4.554 4.466 4.383 9.265 9.265 9.239	4.768 4.682 9.776 9.750 9.724	5.169 5.076 4.981 10.23 10.20 10.17	5.392 5.294 10.71 10.69 10.66	5.707 5.608 11.20 11.17 11.15	6.030 5.927 11.65 11.66	6.358 6.253 12.13 12.11 12.06	6.692 6.578 12.61 12.59 12.56 12.55	7.032 6.916 13.07 13.05 13.02	7.501 7.578 7.252 13.552 13.50 13.47	7.722 7.593 13.99 13.97 13.94	8.071 7.940 14.45 14.42 14.40	8.425 8.292 14.86 14.84 14.81
25 26 27 28 29			8.124 8.100 8.073 8.047	8.755 8.726 8.701 8.674 8.648 8.621	9.185 9.159 9.131 9.105	9.697 9.644 9.616 9.559 9.559 9.559	10.15 10.12 10.10 10.07	10.63 10.55 10.55 10.55 10.55 10.55	11.09 11.07 11.07	11.60	12.05	12.46 12.46 12.45	12.99 12.97 12.94 12.92	13.42	13.89 13.87 13.87	14.37 14.35 14.30 14.30	14.79
290 200 200 200 200 200 200 200 200 200		7.702 7.702 7.645 7.597 7.597 7.545 7.516	7.996 7.971 7.946 7.920 7.895 7.876 7.844	8.701 8.674 8.648 8.521 8.555 8.567 8.542 8.462	9.078 9.052 9.025 8.998 8.970	31.33	10.02 9.955 9.962 9.934 9.907 9.880	10.42	10.98 10.96 10.93 10.90 10.85 10.85 10.85	######################################	12.00 11.98 11.95 11.99 11.90 11.87	12.38	12.64	13.32 13.30 13.36	13.76 13.74 13.71 13.65	14.22 14.20 14.17 14.15	14 64 14 61 14 59 14 56
35 36 37 38 39 40 42	ρ t _s	7.468 7.468 7.442 7.417 7.392 7.343 7.294	7.844 7.819 7.795 7.770 7.721 7.672	8.462 8.435 8.469 8.363 8.365 8.305	5.919 5.565 5.565 5.785	9.400 9.345 9.355 9.355	9.854 9.828 9.800 9.771 9.720 9.668	10.34 10.31 10.29 10.26	10.82 10.80 10.77 10.69 10.63	CONTRACTOR	12111111111111111111111111111111111111	12.16	12.76 12.66	13.16 13.16 13.16 13.13 13.10	13.63 13.60 13.58 13.55	14 09 14 06 14 06 17 96 17 90 17 85 17 77	14 74 14 71 14 69 14 61 14 61 14 61 14 61 14 56 14 56 14 46 14 46 14 47 18 57 14 22
146 146 150 50		7.245 7.197 7.149 7.104	7.623 7.577 7.528	8.154 8.164 8.056 8.009	900258 000258 000258 000259 0000259 000259 000259 000259 000259 000259 000259 000259 000259 0	9.215	9.668 9.563 9.511 9.459 9.409	10.39 10.37 10.31 10.20 10.20 10.20 10.10 10.10 10.04 9.991 9.991 9.899 9.736 9.736	10.53 10.47	11.12 11.06 11.01 10.95 10.90	11.57 11.52 11.46 11.41 11.95	11.49	12.35	13.13 13.05 13.05 12.99 12.94 12.89 12.83	13.44 13.39 13.33 13.23 13.17 13.12 13.06	13.90 13.85 13.74 13.69 13.63	14.17
50 656 656 656 65		7.012 6.966 6.925 6.859	7.437 7.391 7.346 7.302 7.235 7.173	7.959 7.913 7.865 7.798 7.732	8.356 6.335 8.269 8.199	9.059 9.059 9.569 8.969 8.869 8.869 8.869	9.357 9.309 9.261 9.189 9.116	9.838 9.786 9.736 9.664 9.594	10.37 10.32 10.27 10.21 10.14 10.07	10.55 10.55 10.55 10.62 10.54	FF 34	11.78 11.78 11.73 11.68 11.62 11.55 11.47	15.01	12.72 12.67 12.62 12.56 12.46 12.40	12.93 12.93	13.58 13.52	14 06 14 06 14 999 13 74 13 74 13 74 13 74 13 74 13 74 13 74
72 75 78 81 84		6.674 6.674 6.558 6.553 6.446	7.108 7.050 6.989 6.930 6.872 6.816	7.959 7.913 7.865 7.798 7.798 7.798 7.598 7.598 7.598 7.598 7.598	8.132 8.065 7.998 7.937 7.873 7.811	8.602 8.531 8.464 8.335 8.335 8.272	9.357 9.309 9.261 9.189 9.116 9.045 5.975 6.909 8.775 8.775	9.577 9.517 9.576 9.376 9.307 9.176	9.991 9.847 9.847 9.77 9.642	10.54 10.47 10.40 10.32 10.25 10.18 10.11	10.99 10.92 10.84 10.77 10.70 10.62 10,56	11.29 11.32 11.24 11.17 11.09 11.02	11.93 11.85 11.77 11.63 11.55 11.48	12.32 12.25 12.17 12.10 12.02 11.95	12.69 12.62 12.54 12.47 12.39	15.39 13.31 15.25 13.15 13.08 13.00 12.92 12.85	13.66 13.58 13.51 13.43 13.75 13.28

NACA

TABLE	5	T- PAREL	PROPER	7783 (t) E	<u> </u> =0.79	; b <u>4</u> -9	.5; by	1.OL;	tr by = 1.00	; b <u>w</u> = 0	5.94; t ;	-2.15;	; by =0	.69; <u>F</u>	-1; d	= 2.3;	₽ - 7.7
2102 112		18	19	20	an e	22	23	24;	*	26	27	28	29	30	53	32	53
25 26 27 28 29 30		NAW WANN	2.558 2.485 2.450 2.418 2.588	2000 MAN WWW.	New	**************************************	3075470834588	NAN ANN ANN ANN ANN ANN ANN ANN ANN ANN	2957733188 200732188	2.756 2.650	2.806 2.69 2.69 2.68 2.68 2.68 2.68 2.68	2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00	2.858 2.857 2.757 2.750	2.883 2.817 2.812 2.778 2.746 2.655	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2005000 2005000 200500 200500 200500 200500 200500 200500 200500 200500 2005000 200500 200500 200500 200500 200500 200500 200500 200500 2005000 200500 200500 200500 200500 200500 200500 200500 200500 20050	2.955 2.617 2.883 2.819 2.817 2.786
50 55 55 55 55 55 55 55 55 55 55 55 55 5		2.269 2.269 2.219 2.196 2.173	385 385 385 385 385 385 385 385 385 385	3.65.78.47.4 3.65.78.47.4 3.65.78.47.4	257150 25	85577577756	238828 23883 2388 2388 2388 2388 2388 2	2 1 30	855545458 145548	2550 2550 2550 2550 2550 2550 2550 2550	2 199 2 199 2 196	######################################	2.659 2.650 2.575 2.525 2.525 2.525	2.02	2.572	2.648 2.622 3.506	2.756 2.757 2.691 2.645 2.619 2.594
#4 #5	E tg	2000 M	2.144 2.144 2.105 2.068 2.068 2.068	1976 1976 1976 1976 1977 1977 1977 1977	2.200 2.200 2.127 2.130	2.259 2.238 2.255 2.159 2.159 2.124	888 888 888 888 888 888 888 888 888 88	2.363 2.318 2.318 2.296 2.255 2.255 2.216 2.1160	2000 M 20	Second and and and and and and and and and a	2 375	NANA WANA	14440000000000000000000000000000000000	2 5775 2 5775 2 5776 2	20000000000000000000000000000000000000	100 5 7 5 1 7 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1	777 777 777 777 777 777 777 777 777 77
485 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		1.971 1.971 1.988 1.884	1.972 1.917 1.917 1.892 1.868 1.816	2000 2000 2000 2000 2000 2000 2000 200	0.000000000000000000000000000000000000	2.059	2.086 2.056 2.028 2.001 1.975 1.951 1.927	2.115 2.051 2.051 2.050 2.000 1.975 1.952	2.172 2.139 2.100 2.000 2.000	2.076	2.199 2.129 2.100 2.073	2.181 2.153 2.124 2.096 2.070	2.308 2.206 2.176 2.147 2.119 2.093	2.199 2.170 2.112	2.221 2.192 2.164 2.137	279 200 200 200 200 200 200 200 200 200 20	2.296 2.295 2.295 2.295 2.295 2.296 2.179
69 72 75 78		1.767 1.740 1.715 1.668 1.668 1.628	1.824 1.766 1.740 1.740 1.692 1.671	10 10 10 10 10 10 10 10 10 10 10 10 10 1	1.65	1,340,240,240,240,240,240,240,240,240,240,2	1.895 1.864 1.836 1.764 1.764 1.778	1.919 1.888 1.859 1.858 1.782 1.760	1.976 1.942 1.931 1.883 1.895	N 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10005057 00005057 00005057 000055	2.015 2.010 1.977 1.947 1.890 1.865	0957 0967 0968 1.968 1.988 1.985 1.860	2.090 2.094 2.020 1.988 1.059 1.931 1.904	2.075 2.075 2.009 1.979 1.950 1.950 1.896	2.095 2.061 2.029 1.998 1.970 1.945	2.048 2.048 2.048 2.017 1.988 1.961
81 84 25 26 27		2.609 2.146	1.671 1.6632 9.85557 9.88557 9.8857 9.8857 9.8857 9.8857 9.8857	9 5 5 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	10.18 10.10 10.01 9.950	10.77 10.69 10.60 10.52 10.43	11.37 11.28 11.19 11.11	1-750 11-97 11-17-18 11-18	1.75 2.75 2.75 2.75 2.75 2.75 2.75 2.75 2	1.85	1.798 13.77 13.68 13.58	1.88	887 88788854 1111111111	1,904 1.879 1.856 15.60 15.50 15.40 15.30	1.875 16.21 16.11 16.00 15.00	1.917 1.899 16.83 16.65 16.62 16.51	1.911 17.44 17.22 17.22
200		8 056 7 986 7 919 7 851 7 721 7 659	8 10 3 8 10 3 8 10 3 8 20 8	95119 95119 95055 95055 95055 95055 9505 950	00000000000000000000000000000000000000	10.55 10.17 10.19 10.12 10.04 9.966	10.85 10.65 10.65 10.65 10.65 10.54	7436 7417 7417 7417 7417 7417 7417 7417 741	1598684	KKKKKKKK Sestana	15.50 15.30 15.21 15.05 12.05 12.06 12.70	15.60	3.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4	15 10 SE 15 54 14 14 14 14 14 14 14 14 14 14 14 14 14	15.61 15.61 15.51 15.52 15.23	16.51 16.12 16.02 15.65 15.75	16.92 16.82 16.52 16.52 16.53 16.53
267 267 269 299 40	도 문화	7-556 7-415 7-415 7-350 7-188	8.143 8.079 8.017 7.957 7.895 7.836 7.717 7.604	88115315 4556 88115315 4555 88115315 4555	9.1155 1155 1155 1155 1155 1155 1155 115	95.649572	10.21 10.21 10.17 10.10	10.96 10.88 10.81 10.73 10.66 10.59	11.55 11.58 11.18.8.2.5 11.15 11.15 11.15	HITTELERIA PROPERTY P	12 13 15 15 15 15 15 15 15 15 15 15 15 15 15	121124 121124 121124	78.51 13.13.13 13.13.13	14.28 14.20 14.11 14.05	14.00 16.00 16.00	15.55 15.46 15.28 15.28 15.03	16.21 16.06 15.06 15.07 15.07 15.61
NA SEE		00000000000000000000000000000000000000	7.494 7.588 7.286 7.185	7.802 7.802 7.802 7.802 7.594 7.497 7.481	8.554 8.554 8.322 8.321	79896 8762 8762 8752 8752 8752 8752 8752 8752 8752 875	9.761 9.761 9.65065 9.25	10.31 10.18 10.05 9.926 9.805 9.681 9.565	10.87 10.60 10.47 10.22 10.22	11123	11.84 11.77 11.44 11.76 11.46 11.18	ETHINKKY SASSINESS	139888 7 1 N	13.70 15.55 15.40 13.25 13.10 12.06 12.85	1115781 1115781 1115781 1115781 1115781 1115781	######################################	15.136 13
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(8) N. 15.00		5.475 10.15 10.15 10.09	10.76 10.76 10.72 10.70	6.566 6.554 6.554 11.55 11.55 11.55	6.80 11.96 11.96 11.96	7.377 7.264 12.55 12.55 12.55 12.55	8.162 7.976 7.846 7.730 13.17 15.15 13.13	8.329 8.199 17.75 13.72 15.70	8.882 14.56 14.55 14.55	155 5548 11111	9.946 9.799 9.654 15.53 15.51 15.48	10.45 10.30 10.15 16.13 16.11 16.10 16.08	16.70 16.69 16.67 16.67	11.50 11.16 17.50 17.28 17.27 17.25	11.83	12.55 12.35 12.19 16.41 18.40 18.58 18.57	112.71 12.71 12.85 12.85 13.85
26		10.07 10.05 10.05 10.05 9.970 9.970 9.949	8648888648 8648888648 8648888648 8648888848 86488888 86488888888	11111111111111111111111111111111111111	11.88 11.86 11.82 11.80 11.78	12-51	15.10 15.08 15.06 15.02 15.02 15.00 12.98	15.66 15.65 15.65 15.61 15.57	1 114.29	8888888 1111111		16.05 16.05 16.05 16.05 15.06 15.06	16.619 16.619 16.619 16.654 16.554 16.45	17.24	17.00	100 100 100 100 100 100 100 100 100 100	18.85 18.85 18.85 18.82 18.79 18.76 18.76
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144995X4	t ₅	77.75.55 77.75.55 77.75.55 77.75.55 77.75	10.29 10.24 10.20 10.16 10.12	10.73	11111111111111111111111111111111111111	17118	12121212121212121212121212121212121212	13.30 13.30 13.32 13.13 13.13	15.96 15.92 15.87 15.85 15.76 15.75	455599458555555555555555555555555555555	15.10 15.06 15.08 14.97 14.92	177187688546	16.12 16.27 16.27 16.20 16.12 16.12 16.00 15.00	16.85 16.85 16.85 16.87 16.87	17 651 17 651 17 59 17 59 17 59 17 59 17 59 17 50 17 5	18 11 18 10 18 05 17 97 17 91 17 91 17 91 17 78 17 78 17 78 17 62 17 57 17 42 17 36 17 36 17 36 17 36 17 36	15 15 15 15 15 15 15 15 15 15 15 15 15 1
50246880586975858		9-166 9-161 9-261 9-261 9-262 9-262	10.05 10.03 9.990 9.887 9.886 9.686 9.686	10.60 10.60 10.54 10.47 10.41	11.25 11.21 11.08 10.96	11111111111111111111111111111111111111	12.46 12.41 12.55 12.20 12.15	17.65 17.68 12.88 12.75	15.62 15.55 15.49 15.42 15.56	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	11 14 15 15 15 15 15 15 15 15 15 15 15 15 15	15 45 15 45 15 45 15 22 15 22	16.04 15.93 15.87 15.80 15.80	156485471488 166654714887148	17.21 17.17 17.04 16.98 16.92	17.78 17.88 17.88 17.55 17.55	18.77 18.77 18.15 18.08 18.08
78 81 84		9.062 9.027 8.969 8.911	9.568 9.568 9.510	10.25 10.25 10.25 10.17 10.17	10.85 10.77 10.71	11.44 11.38 11.32	12.09 12.09 12.09 11.96 11.91	12.75 12.62 12.56 12.56	15.23 15.16 15.10	13.90 13.80 13.78 13.71	北海	15.02 14.96 14.09	15.61 15.54 15.48	16.21 16.14 16.08	16.65 16.65	17.36 17.29 17.23	17.96 17.89 17.83 17.77



TABLE 6	Y	- Panel	PROPER T	ribs E	-1.00;	bA = 9	31. pA =	1.04; 1	<u>L</u> = 1.06	b = c	.94; t r	= 2.13;	by = 0.	.69; r	=1; d	-2.4; {	? <u>.</u> = 7.8
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25 26 27 28 29		3.177 3.131 3.086 3.043 3.002 2.963 2.925	3.225 3.178 3.133 3.090 3.049 3.010 2.972	3.270 3.223 3.179 3.136 3.055 3.055 3.017	3.313 3.267 3.222 3.179 3.138 3.098 3.060	3.355 3.309 3.264 3.180 3.140 3.102	3.395 3.345 3.304 3.261 3.220 3.181 1.142	3.433 3.387 3.343 3.300 3.259 3.219 3.181	3.470 3.424 3.350 3.336 3.296 3.257 3.219	3.505 3.460 3.416 3.373 3.293 3.255 3.218	3.539 3.494 3.450 3.408 3.367 3.328 3.290	3.572 3.527 3.483 3.441 3.401 3.362 3.324	3.604 3.559 3.516 474 3.474 3.474 3.474 3.474 3.474 3.474 3.474	3.634 3.590 3.597 3.505 3.465 3.388 3.351	3.663 3.619 3.576 3.576 3.495 3.456 3.418	3.692 3.648 3.605 3.564 3.524 3.486 3.488	3.719 3.676 3.633 3.592 3.553 3.514 3.477
30 312 33 34 36 37 37 37 37 37 37 37 37 37 37 37 37 37		2.888 2.853 2.819 2.786 2.755 2.725 2.695 2.667	2.935 2.900 2.865 2.833 2.801 2.770 2.741 2.712 2.654	2.950 2.944 2.910 2.877 2.845 2.785 2.785 2.785 2.701	2.988 2.953 2.953 2.920 2.686 2.857 2.827 2.798	3.065 3.029 2.995 2.962 2.929 2.898 2.858 2.839	1.105 3.070 3.035 3.002 2.969 2.938 2.908 2.878	3.144 3.108 3.074 3.040 3.008 2.977 2.946 2.917	3.146 3.111 3.078 3.045 3.014 2.983 2.954	3.182 3.145 3.114 3.061 3.050	3.253 3.217 3.183 3.149 3.117 1.085 1.054 3.025 2.996 2.968	3.267 3.251 3.163 3.150 3.150 3.068 3.058	201 216 216 2152 2152 21091 21091 21091	3.281 3.288 3.248 3.215 3.164 3.153	3.312 3.312 3.312 3.279 3.246 3.25 3.164	3.412 3.376 3.342 3.309 3.276 3.245 3.214 3.184	3.705 3.771 3.706 3.774 2.244
48	ŧs	2.613 2.557 2.538 2.448 2.468 2.468	2.654 2.657 2.631 2.582 2.535 2.450 2.410	2.624 2.577 2.532 2.490	2.798 2.770 2.742 2.665 2.618 2.573 2.490	2.810 2.783 2.756 2.755 2.657 2.612 2.569 2.528	2.850 2.822 2.795 2.695 2.606 2.606 2.565	2.656 2.650 2.633 2.752 2.733 2.656 2.643	2.925 2.897 2.870 2.018 2.769 2.722 2.678	2.990 2.995 2.996 2.854 2.757 2.713 2.713	2.996 2.968 2.940 2.888 2.838 2.791 2.747	3.030 3.001 2.974 2.921 2.872 2.872 2.824 2.779	3.034 3.007 2.954 2.904 2.857	3.094 3.066 3.039 2.986 2.936 2.888 2.843	3.125 3.097 3.070 3.017 2.966 2.919 2.873 2.830	3.155 3.127 3.100 3.047 2.996 2.948 2.903 2.859	3.185 3.156 1.129 3.076 3.026 2.977 2.912
54 54 54 54 66 66 66		2.332 2.297 2.264 2.233 2.203 2.161 2.122 2.065	2.373 2.338 2.338 2.372 2.242 2.199 2.159 2.121	2.451 2.413 2.377 2.343 2.310 2.279 2.236 2.157	2.451 2.415 2.350 2.345 2.316 2.272 2.230 2.191	2.452 2.452 2.364 2.365 2.307 2.265 2.225 2.168	2.526 2.489 2.453 2.419 2.387 2.341 2.298 2.256	2.562 2.524 2.458 2.454 2.375 2.375 2.375	2.556 2.558 2.558 2.458 2.458 2.468 2.364 2.322	2.592 2.592 2.555 2.520 2.527	2.6655 6625 6625 6625 6625 6625 6625 662	2.657 2.657 2.650 2.550 2.550 2.550 2.550 2.450	7685157 6	2.758 2.759 2.681 2.645 2.510 2.561 2.561 2.571	2.758 2.748 2.711 2.674 2.639 2.590 2.593 2.499	2.617 2.776 2.776 2.703 2.666 2.618 2.571 2.527	2.846 2.806 2.768 2.731 2.696 2.646 2.598
72 75 78 81 85 23		2.051 2.019 1.988 1.960 1.933 11.81 11.73 11.66	2.056 2.053 2.022 1.993 1.965	2.121 2.087 2.055 2.026 1.997 11.42 13.34 13.26	2.120 2.088 2.057 2.029 14.23 14.14	2.120 2.059 2.059 15.04	2,220 2,185 2,151 2,120 2,000	2.252 2.216 2.162 2.150 2.119 15.67 16.58 16.49	2.247 2.212 2.179 2.148 17.49 17.40	2.395 2.553 2.114 2.277 2.242 2.208 2.177 18.11 18.22	2.106 2.205 2.205 19.13	2.373 2.335 2.299 2.265 2.232 19.95 19.86	2.363 2.327 2.327 2.259 2.259 20.79	2.430 2.391 2.354 2.319 2.286 21.61 21.52	2.458 2.418 2.381 2.312 22.44 22.34 22.24	2.445 2.445 2.408 2.372 2.338 23.27 23.17	2.471 2.471 2.471 2.473 2.473 2.473 2.473 2.473 2.473 2.473 2.473
25 26 27 28 29 30 31 32		11.58 11.51 11.44 11.36 11.29 11.82 11.15	12,53 12,45 12,38 12,30 12,22 12,15 12,06 12,00 11,93 11,86	13.16 13.10 13.02 12.94 12.87 12.79 12.71 12.64	14.06 13.98 13.90 13.62 13.66 13.66 13.58 13.66	14.78 14.78 14.54 14.54 14.30 14.30 14.30	15.85 15.65 15.59 15.51 15.42 15.18 15.09 15.09	16.19 16.22 16.22 16.22 16.06 15.98 15.90 15.81	17.31 17.13 17.13 17.04 16.95 16.70 16.70 16.62	15.13 15.03 17.59 17.65 17.65 17.59 17.51 17.42	18.55 18.76 18.67 18.67 18.89 18.40 18.31	777 777 777 777 777 777 777 777 777 77	2000 H H H H H H H H H H H H H H H H H H	21.42 21.32 21.22 21.13 20.94 20.85 20.75 20.66	22.05 21.95 21.85 21.66 21.57	23.07 22.97 22.87 22.77 22.68 22.58 22.48 22.39	27.50 27.60 27.60 27.50 27.50 27.50 27.50 27.50
	<u>R</u>	11.08 11.01 10.95 10.88 10.82 10.75 10.69 10.63	11.55 11.79 11.65 11.58 11.52 11.45 11.38	12.57 12.43 12.36 12.29 12.22 12.15	13.25 13.21 13.13 13.06 12.99	14.14 14.07 13.99 13.92 13.84 13.77 13.70	14 78 14 78 14 78 14 78 14 78 14 78 14 78	15.50 15.42 15.34	16.29 16.29 16.21	17.42 17.33 17.25 17.17 17.09 17.01 16.92 16.65	18.23 18.14 18.05 17.97 17.89 17.80 17.72 17.64	19.04 16.95 16.67 16.69 16.52 16.52 16.27	19.85 19.76 19.67 19.49 19.41 19.41 19.67	20.57 20.39 20.30 20.30 20.30 20.30 20.30 20.30	21.46 21.38 21.29 21.20 21.11 21.02 20.94 20.65	22.29 22.20 22.02 21.92 21.63 21.75 21.48	23 21 23 11 23 02 22 8 22 8 22 74 22 56 22 56 22 47
146 146 50 524	t g	10.50 10.36 10.26 10.04 9.928 9.420 9.715	11.01 10.89 10.77 10.66 10.55	12.02 11.89 11.76 11.64 11.52 11.40 11.28 11.17	12.78 12.65 12.52 12.39 12.27 12.14 12.02 11.90	15.42 15.48 15.25 15.25 17.25 17.25 17.25 17.25 17.25 17.25 17.25	14 .19 14 .05 13 .78 13 .65 13 .53 13 .53 13 .53 13 .53 13 .53	15.26 15.12 14.97 14.62 14.68 14.55 14.41 14.28 14.15	90000000000000000000000000000000000000	16.53 16.24 16.09 15.95 15.67	17.32 17.17 17.02 16.87 16.72 16.55 16.44	16.12 17.96 17.65 17.65 17.35 17.35 17.21	18.75 18.75 18.59 18.28 18.13 17.99	19.57 19.71 19.54 19.22 19.67 16.76 16.76	20.51 20.15 20.15 20.02	21.31 21.14 20.97 20.65 20.49 20.33	22.12 21.94 21.77 21.61 21.44 21.25 21.12
56 58 69 69 75 75		9.614 9.513 9.367 9.227 9.089 8.958 8.830 8.703	10.33 10.23 10.07 9.925 9.779 9.540 9.505 9.374	11.05 10.94 10.79 10.63 10.46 10.34	11.79 11.67 11.51 11.75 11.19 11.04 10.89	124 58 584 124 124 124 124 124 124 124 124 124 124	13.27 13.15 12.79 12.63 12.46 12.30 12.15	14.02 13.69 13.71 13.53 13.36 13.19 13.02 12.66	14.78 14.64 14.46 14.27 14.09 13.91 13.75 13.58 13.42	15.53 15.40 15.40 15.45 15.45 14.55 14.51	16.30 15.56 15.58 15.58 15.58 15.68	16:04	17,49 17,49 17,49 17,88 17,88 17,88 16,89	15.62 14.47 16.26 16.05 17.64 17.64 17.45 17.26	19.70 19.55 19.35 19.35 19.65 18.81 18.60 18.40 18.01	20.18 20.03 19.80 19.59 19.37 19.17 18.96	20.56 20.58 20.58 20.54 20.54 19.52
81 84 23 24 25 26		8.584 8.466 13.08 13.07 13.06 13.04	9.122 13.65 13.64 13.62 13.61	10.05 9.924 9.791 14.61 14.59 14.59	19017	11.30 11.15 16.14 16.13 16.12 16.11	12.00 11.85 16.87 16.86 16.85	12.71 12.55 17.60 17.60 17.59 17.56	15.57 16.56 16.56 16.55 16.55	14.13 13.97 19.13 19.12 19.12 19.11	14.69 19.83 19.82 19.81 19.81	15,42 20,58 20,58 20,57 20,56	16.51 16.33 16.15 21.30 21.29 21.28 21.27	17.07 16.89 22.04 22.04 22.03 22.03	17.62 17.63 82.72 82.72 82.72 82.71 82.71	18.96 16.76 18.57 18.37 23.43 23.42 23.42 23.42	19.12 24.05 24.05 24.04 24.04
29 30 31 32 33 34 35		17.01 12.99 12.98 12.97 12.95 12.95 12.94 12.92	13.76 13.76 13.75 13.74 13.72 13.72 13.71	75655 14455 14455 14455 14455 14455 14455 14455 14455 14455 1445 145 1	15559882754851197411 15559882754851197411	16.05	1675 1677 1616 1616 1616 1616 1616 1616	17,54 17,54 17,53 17,53 17,53 17,50 17,49	16.32 16.11 15.30 16.29 16.26 16.27	19.05 19.05 19.05 19.05 19.05 19.05 19.05	19.76 19.76 19.76 19.76 19.74	56554 5554 55555555555 5555555555 55555555	21.26 21.25 21.24 21.27 21.28 21.27 21.28	22.01 22.00 22.00 21.99 21.98 21.97 21.96	1996 1966 1976 1976 1976 1976 1976 1976	23.40 23.39 23.39 23.38 23.38 23.38	24 001 24 001 24 000 24 000 24 000
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69 72 75 75 81 84		12.38 12.33 12.28 12.23 12.18 12.13	13.16 13.11 13.06 13.01 12.96 12.91	13.94 13.89 13.83 13.79 13.74 13.69	14.72 14.67 14.62 14.57 14.52 14.47	15.50 15.40 15.35 15.30 15.24	16.25 16.15 16.15 16.05 16.05	17.00 16.95 16.90 16.85 16.80 16.75	17.78 17.73 17.68 17.63 17.58 17.58	15.56 15.51 18.46 16.41 15.36 15.31	19.28 19.23 19.18 19.14 19.09 19.04	20.05 20.00 19.95 19.91 19.86 19.81	20.79 20.74 20.70 20.65 20.60 20.55	21.55 21.55 21.46 21.42 21.37 21.32	22,26 22,26 22,17 22,13 22,08 22,03	22.99 22.95 22.95 22.90 22.86 22.81 22.77	23.65 23.60 23.50 23.52 23.45 23.45



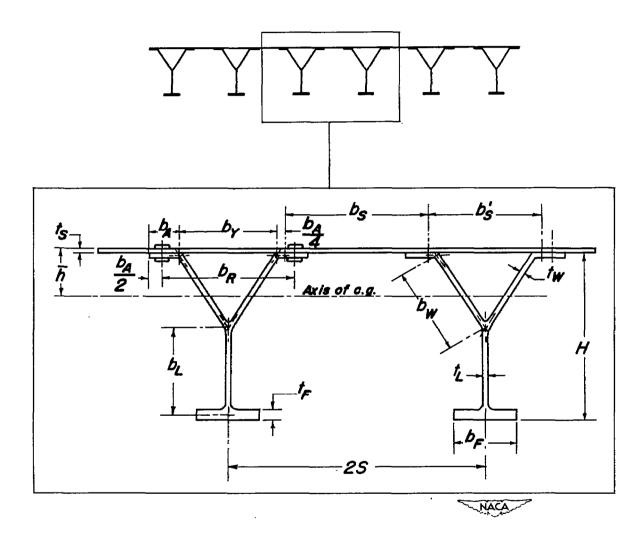


Figure I. - Symbols for panel dimensions.

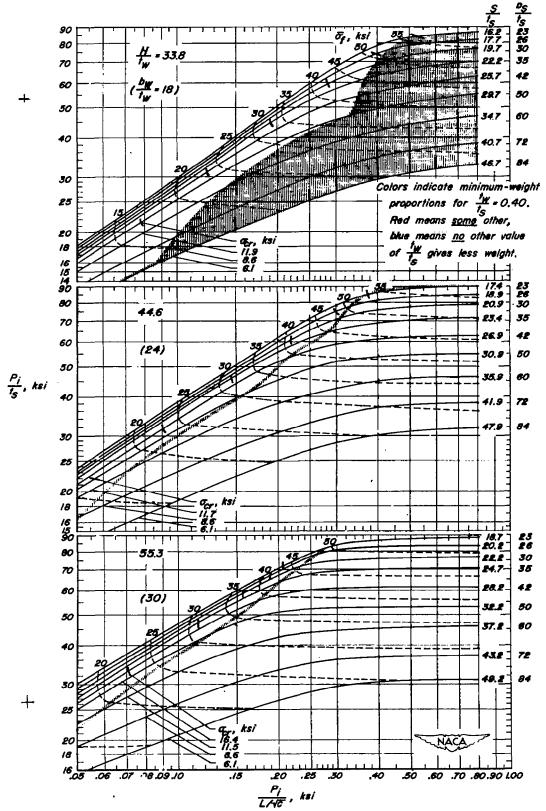


Figure 2.— Direct-reading design chart for flat compression panels of 75S-T aluminum alloy with straight-web Y-section stiffeners, $\frac{t_W}{t_S}$ = 0,40,

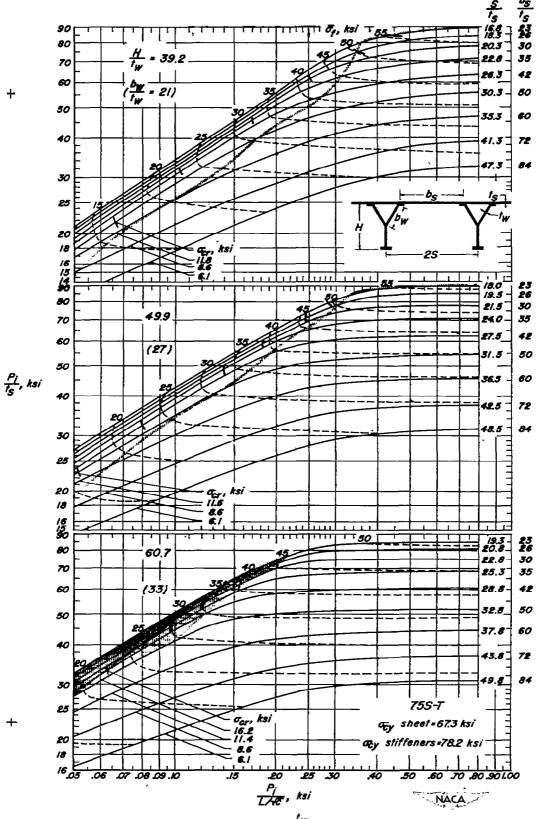


Figure 2.- Concluded, $\frac{t_W}{t_S} = 0.40$.

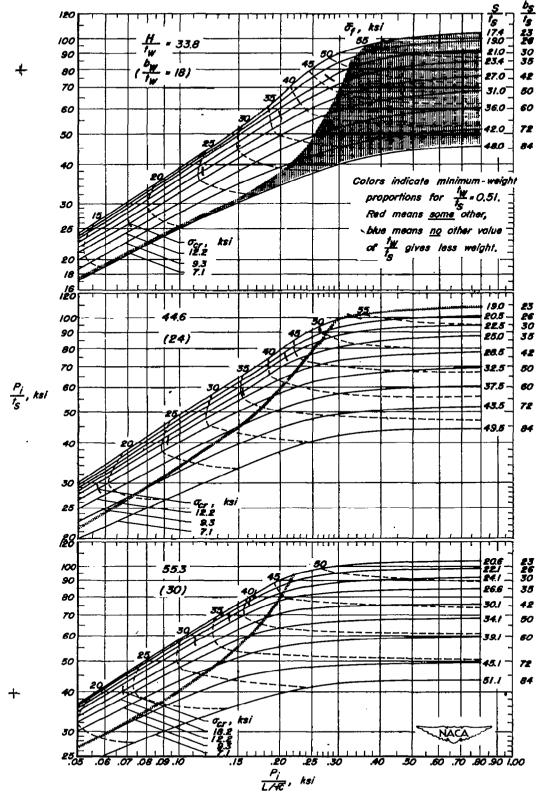


Figure 3.— Direct-reading design chart for flat compression panels of 755-T aluminum alloy with straight-web Y-section stiffeners. $\frac{t_W}{t_S} = 0.51$.

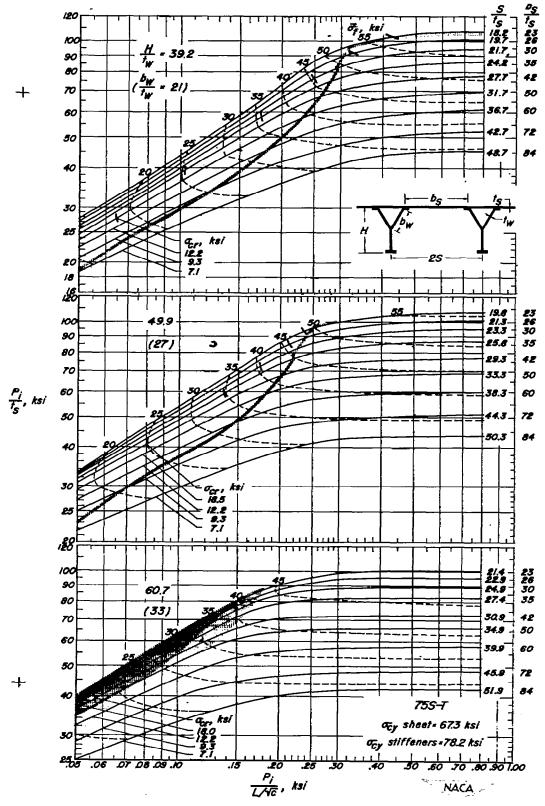


Figure 3.— Concluded, ## = 0.51.

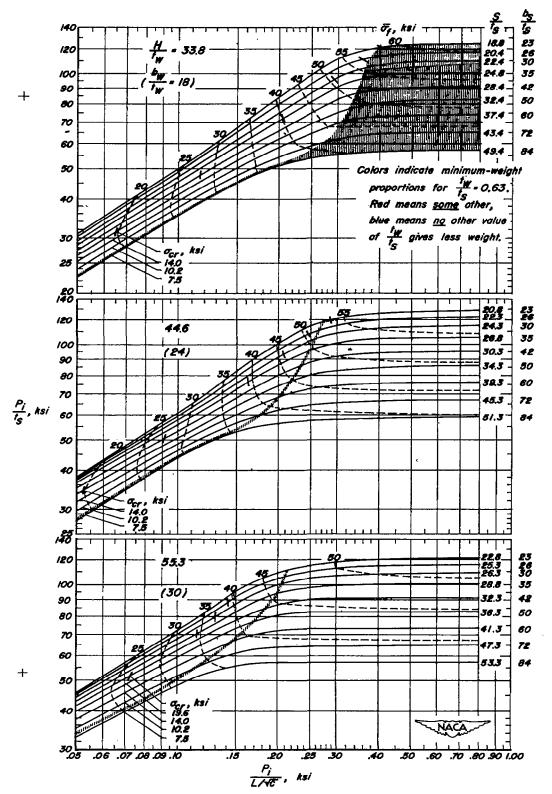
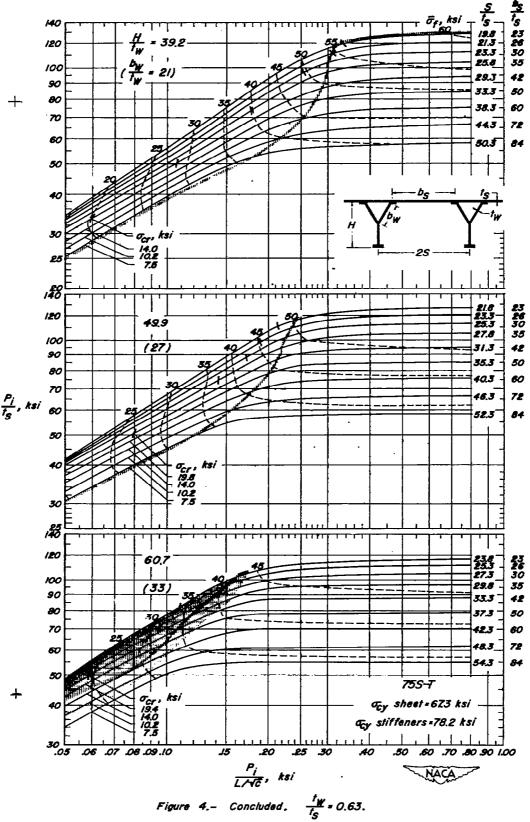


Figure 4.- Direct-reading design chart for flat compression panels of 75S-T aluminum alloy with straight-web Y-section stiffeners, $\frac{t_W}{t_S} = 0.63$.



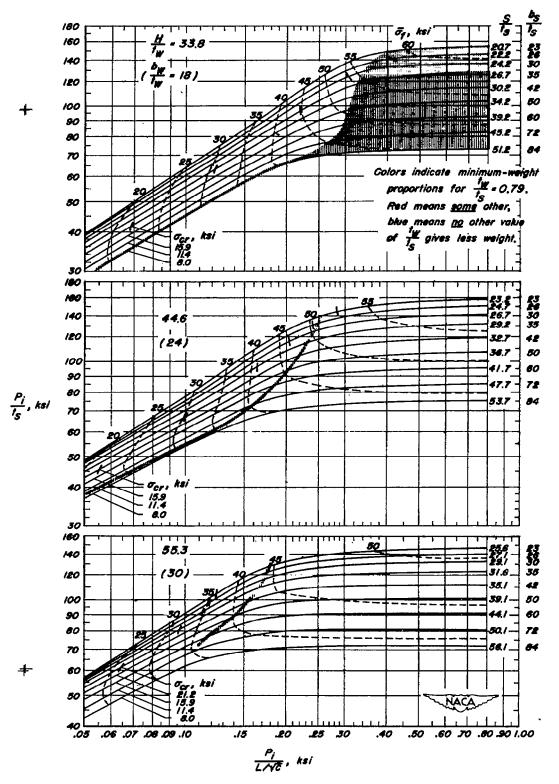


Figure 5.- Direct-reading design chart for flat compression panels of 75S-T aluminum alloy with straight-web Y-section stiffeners, $\frac{t_W}{t_C} = 0.79$.

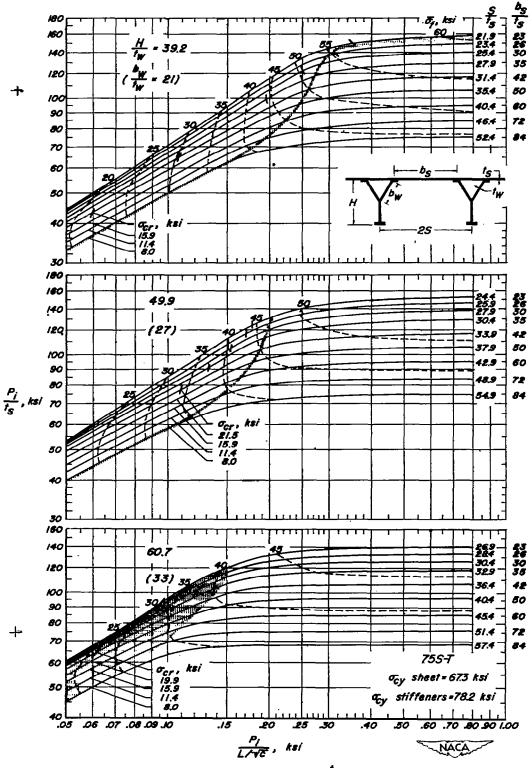


Figure 5.— Concluded, $\frac{t_W}{t_S} = 0.79$.

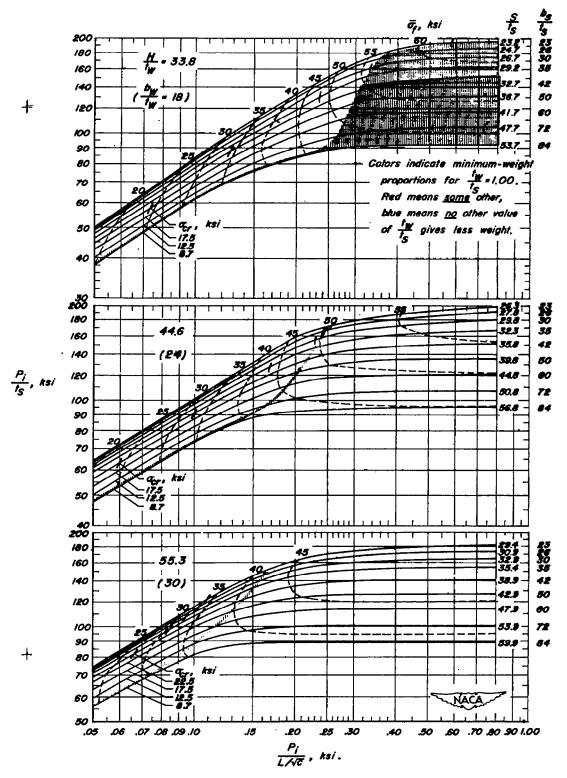


Figure 6.- Direct-reading design chart for flat compression panels of 75S-T aluminum alloy with straight-web Y-section stiffeners, $\frac{t_W}{t_S}$ =1.00.

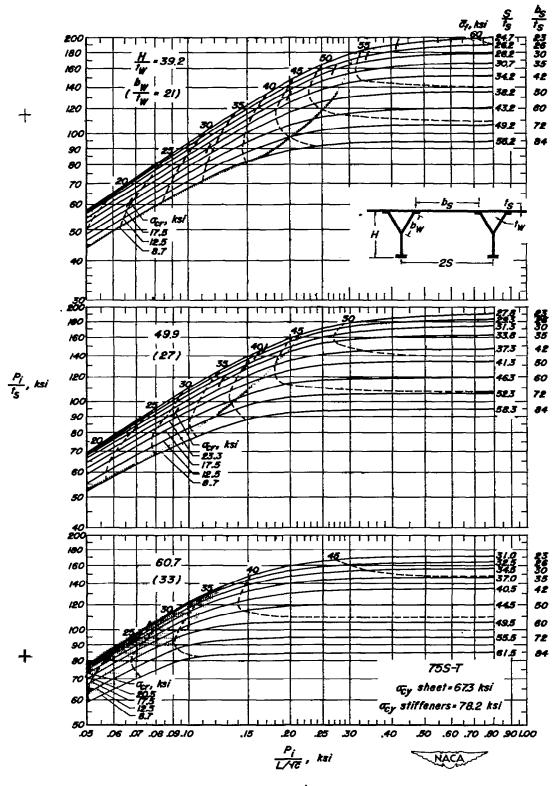


Figure 6.- Concluded, $\frac{t_W}{t_S} = 1.00$.

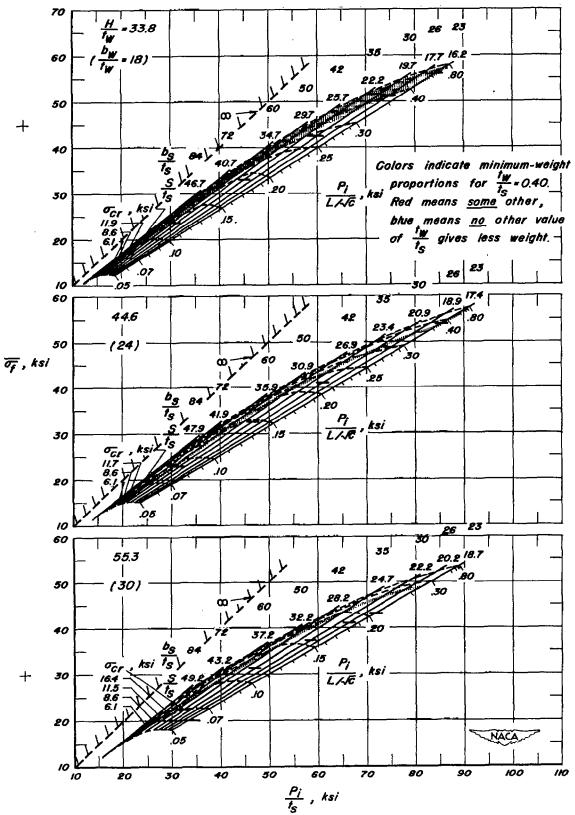


Figure 7.—Direct-reading design chart(alternate form) for flat compression panels of 75S-T aluminum alloy with straight-web Y-section stiffeners. $\frac{f_W}{f_S}$ = 0.40.

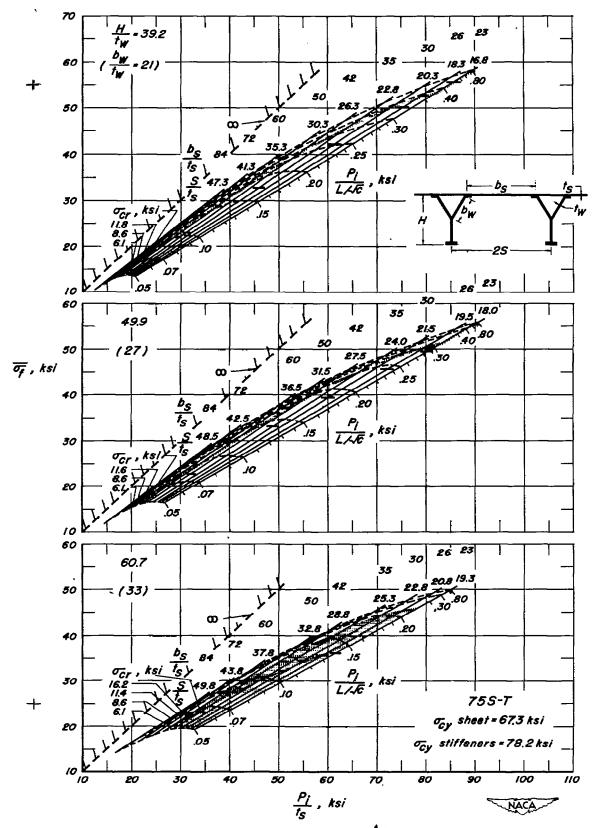


Figure 7.—Concluded. Ty = 0.40.

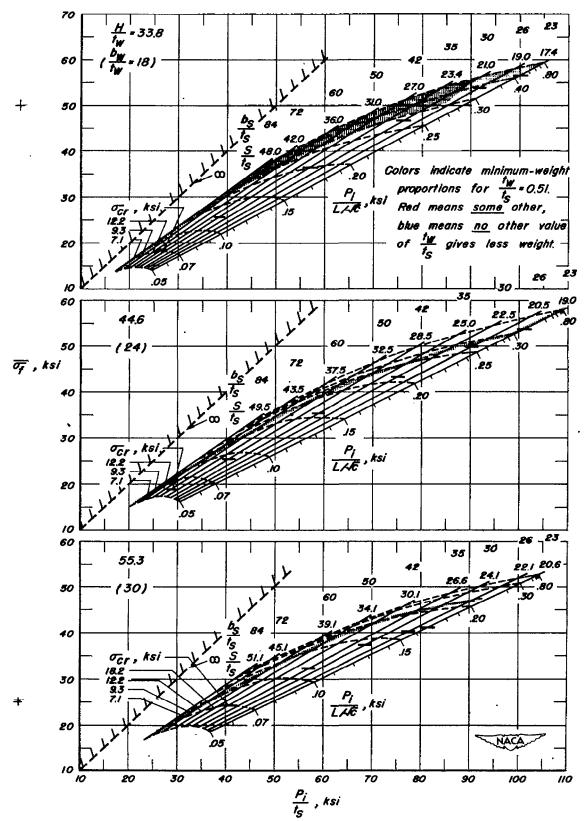


Figure 8.—Direct-reading design chart(alternate form) for flat compression panels of 75S-T aluminum alloy with straight-web Y-section stiffeners, $\frac{t_W}{t_S}$ = 0.51.

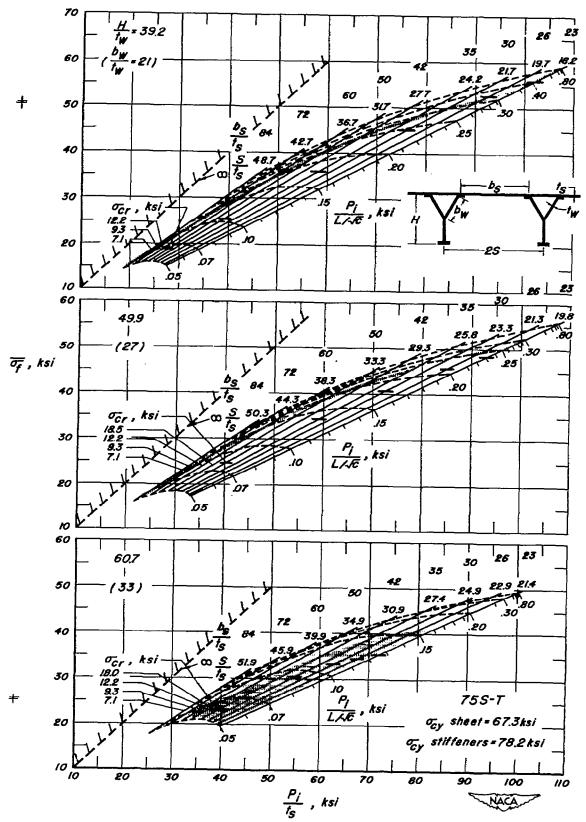


Figure 8.—Concluded. $\frac{t_W}{t_S} = 0.51$.

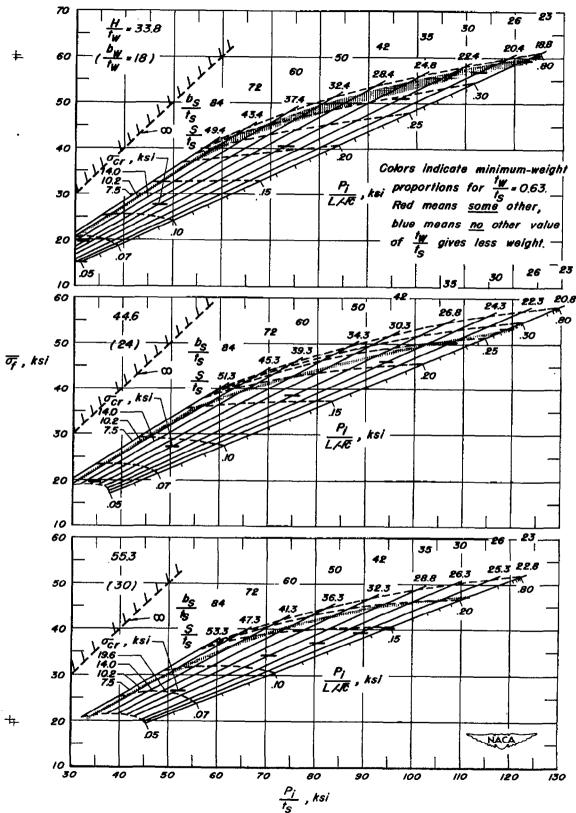


Figure 9.— Direct-reading design chart(alternate form) for flat compression panels of 75S-T aluminum alloy with straight-web Y-section stiffeners, $\frac{t_W}{t_S}$ = 0.63.

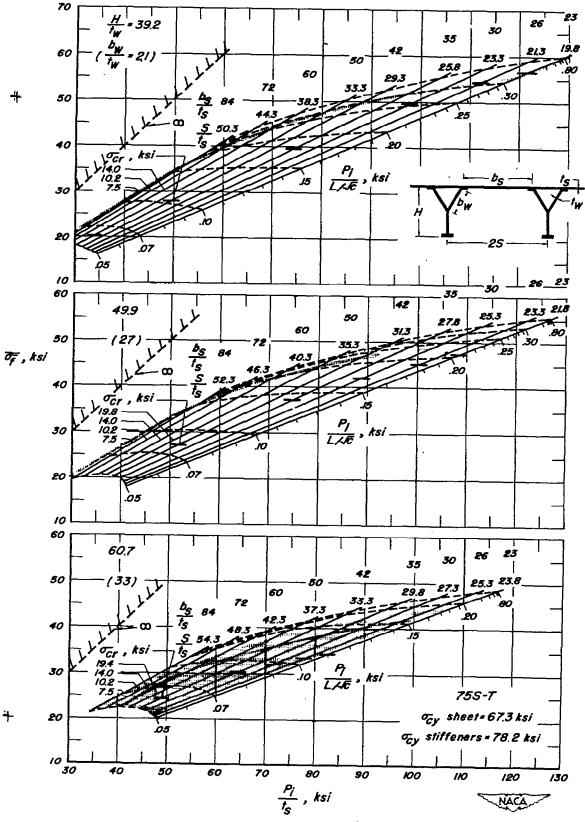


Figure 9.—Concluded. $\frac{t_W}{t_S} = 0.63$.

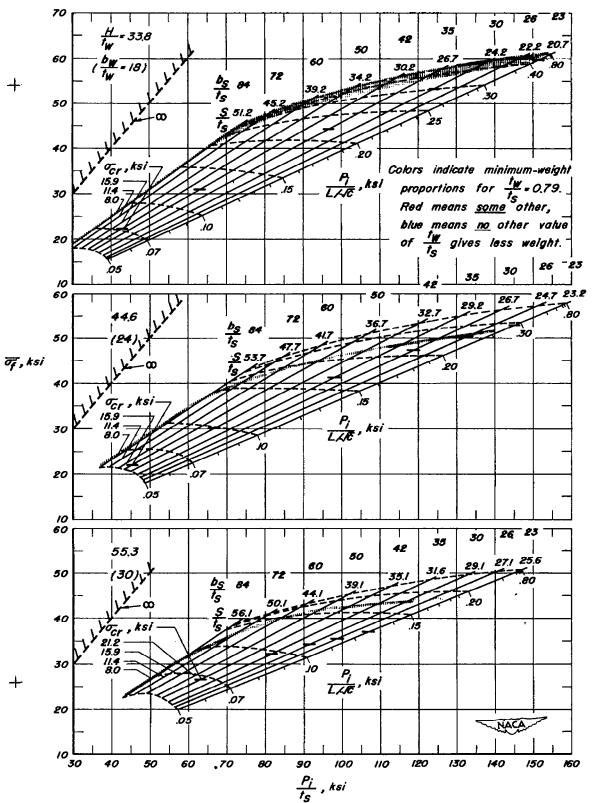


Figure 10.— Direct-reading design chart(alternate form) for flat compression panels of 75S-T aluminum alloy with straight-web Y-section stiffeners. $\frac{t_W}{t_S}$ = 0.79.

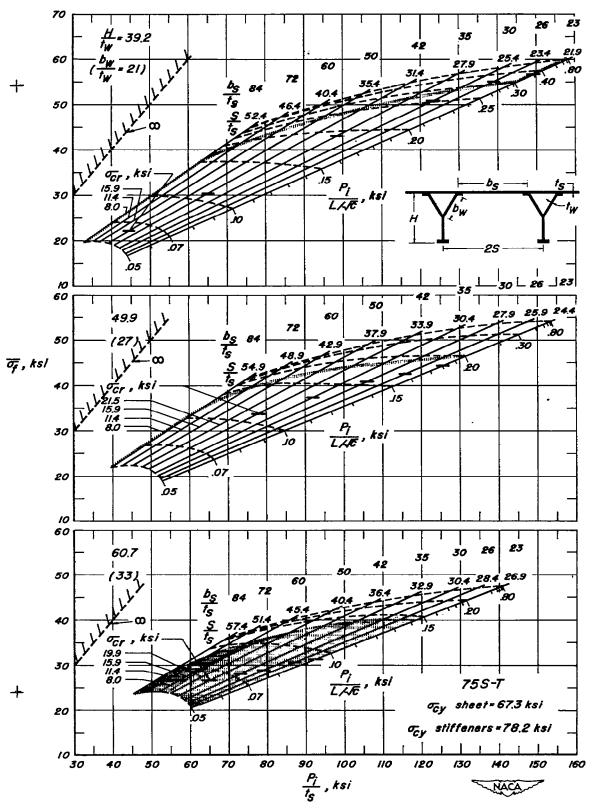


Figure 10.—Concluded, $\frac{\hbar_W}{t_S} = 0.79$.

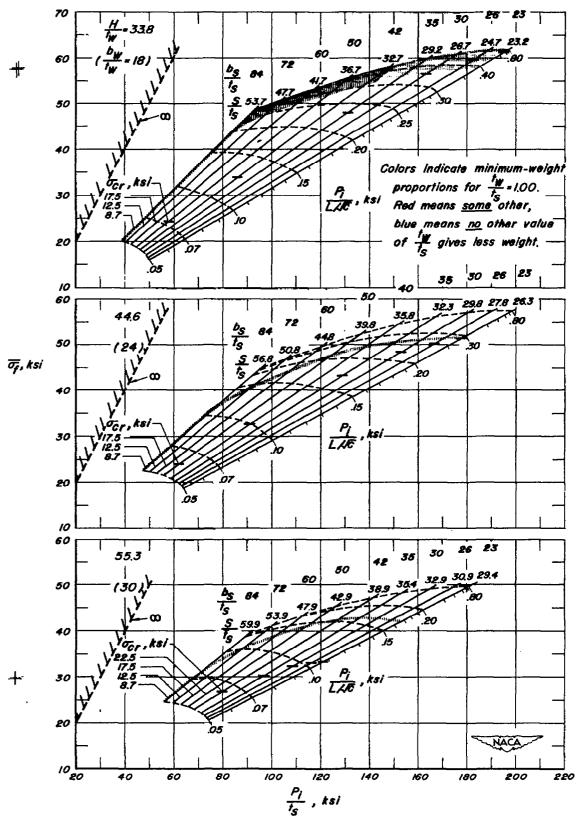


Figure 11.— Direct-reading design chart (alternate form) for flat compression panels of 75S-T

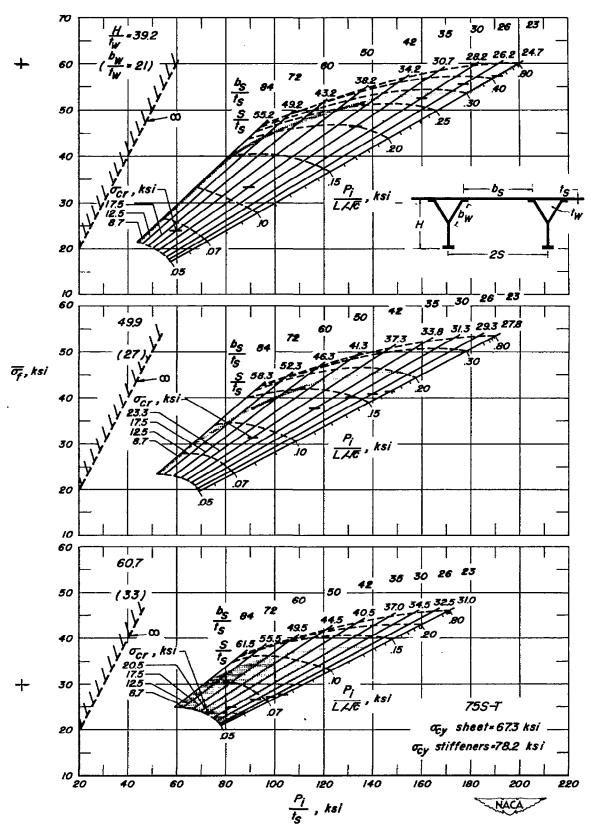


Figure 11.—Concluded, $\frac{t_W}{t_S} = 1.00$.

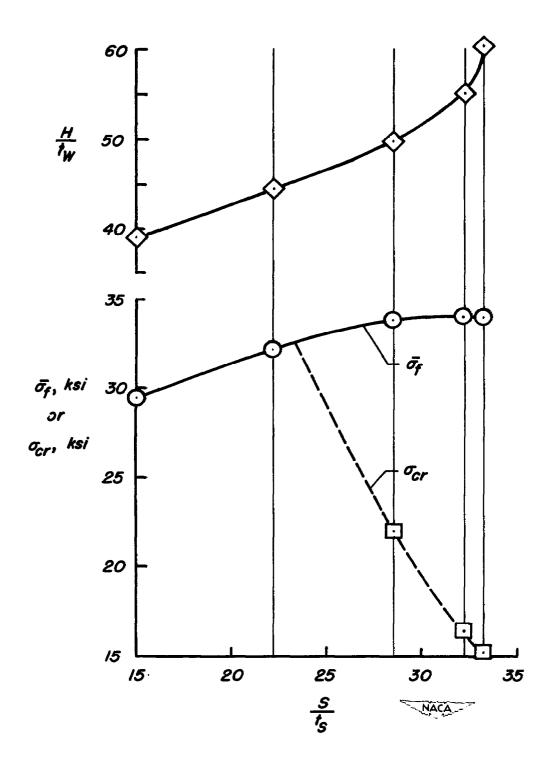


Figure 12.— Plot for obtaining design from design charts.